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HONEY MARKETS

U. S. GOVERNMENT REPORT
Information from Producing Areas (first half of September)

CALIFORNIA POINTS: Southern California.—Drouth continues in Riverside County and hail storms have done much damage. Bees working on alfalfa have filled up and some have made a small surplus. Buckwheat bloomed profusely but yielded little nectar. Bees near lima beans and lemons are breeding up unusually well and are in better shape than usual. In San Diego County bees are filling up slowly but steadily for winter stores. Beekeepers in sage territory have still about half the crop unsold. Buyers are offering 8¾c and 9c per lb. for sage and a few small beekeepers have sold at those figures; some at 10c per lb. Light amber buckwheat, ton lots, has moved at 14c per lb. White orange is generally held at 14c per lb. Few sales of white sage comb at $8.00 per case. A good demand is reported for beeswax at 30c per lb. In the Imperial Valley a few ton lots have moved at 7½c per lb. Beekeepers are generally holding for 7½-8c per lb., with buyers offering 7-7¼c per lb. Central California—For light amber alfalfa buyers are offering 7-7¼c per lb., but no sales reported, as beekeepers are holding for 7½-8c per lb. Northern California—A normal honey crop is now looked for on the whole, but the alfalfa crop is light. Ton lots light amber extracted have sold at 6¾c per lb.; one small car extra light amber 8c per lb. Beeswax, 30c per lb.

PACIFIC NORTHWEST — Recent heavy rains have made fall plowing possible, and considerable alfalfa in the eastern part of the area which was frozen last winter but not turned under will now be plowed. The Yakima Valley crop is below normal due to adverse weather during the honey flow and spray poisoning, yet Washington on the whole had a good crop. Numerous inquiries are being received, and they are said to be increasing. Ton lots extracted are selling for 9-10c per lb., some holding for 11c; 60s, 10-12c; small pails, 11-13c per lb.; beeswax, 27-32½c per lb.

INTERMOUNTAIN REGION—Recent reports emphasize the spotted nature of this year's crop. If one beekeeper has secured the best yield in years, another in the same state may have only 40 per cent of last year's output. There seem to be more reports of short crops than of those showing good returns, and it is apparent that the yield as a whole will be less than was anticipated earlier in the season. Some are still securing a small surplus from third crop alfalfa, sunflowers, rabbit brush, etc., but due to cool days and cooler nights bees can work only a short time, even on good days. The average colony is securing sufficient stores to continue fall brood-rearing, which should result in colonies being of proper strength for favorable wintering; but some colonies will go into winter in poor shape, due to long periods of bad weather. Inquiries have recently been more numerous, but buyers have not generally advanced their ideas of prices. Numerous carlot sales of white sweet clover, white alfalfa, white alsike, or a combination, have been reported at 8c, 8¼c, 8½, 8.65c, 8¾c, 9c, 9½c per lb.; but the great bulk of the movement so far has been at 8½c per lb. Ton lot sales have been made from 7½c to 10c per lb.; 60s, 9½-10c; small pails, 10-14c per lb. Many beekeepers are holding for higher prices, believing that carlot prices will advance to 10c per lb. Demand for comb honey has been moderate. Carlots have been sold at $4.50 for fancy, $4.10 for choice; one car fancy reported moved at $4.75 per case; smaller lots, No. 1, $4.50-5.25; No. 2 and choice, $4.00. Beeswax, 26-32c per lb.

ARIZONA—The weather continues dry, but in most apiaries bees have stored some winter stores. Large lots light amber alfalfa quoted at 7¼c per lb. Buyers are indifferent regarding mesquite extracted, offering 8c per lb. for best grade, which beekeepers are unwilling to accept.

TEXAS—Recent heavy rains covering all central Texas, and amounting in some places to 2 to 5 inches, have greatly improved conditions. It was the first important rain in nearly a year in some of the drouth-stricken area. While probably too late to add much to the current crop surplus, the rain should obviate the necessity for feeding, for which plans had been made, and should put colonies into winter in good condition. Requeening will probably be practiced less this fall than usual, but as there was exceptionally heavy requeening in the spring the loss on that account may not be great. Some surplus has been stored in south Texas where rains had fallen. Northeast Texas reports a good cotton crop, and looks for a fall flow from cotton, bitterweed, and aster. Colonies which were extracted early in August have again made a good surplus. In most other areas the cotton flow was practically a failure. The state will prboably be on an importing basis before spring, as the yield this season is hardly one-third of normal. Demand for 60-lb. cans extracted is especially good; but comb honey is wanted in small cans. The following prices have been reported, per lb., extracted, 60s, 10-11c per lb.; 10s, 12c; some cotton, 15c; bulk comb, 10s, 15-16c; some cotton, 20c; beeswax, 25c.

PLAINS AREA—The honey flow was generally cut short by hot, dry weather. Some Iowa beekeepers report only half a normal crop, and from southern Illinois comes a report of the poorest crop in 40 years. Where rain has fallen, a fall flow is being secured. Demand is reported as generally good, and much honey has already moved. In carlots, white clover has sold at 9½-10c per lb.; ton lots, 9½-10½c; 60s, 10-11c; small pails, 15c per lb.; white comb has sold at $4.50 per 24-section case for No. 1, $3.75 per case for No. 2. Beeswax, 33c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES—A crop normal or above is generally reported, and some very large yields have been secured. Wisconsin and Minnesota have bumper crops, and Michigan has on the whole one of the largest crops ever harvested. Some colonies in the northern part of the state have produced 400 to 600 lbs. from raspberry and milkweed. However, the long clover flow in Michigan, lasting three months, has allowed the white honey to be mixed with a little darker honey in some supers, making it slightly off-grade. Bees are still working on goldenrod, aster, sweet clover and buckwheat, and securing sufficient to stimulate brood-rearing. Most bees have ample stores for winter. No carlot sales reported. Ton lot sales white clover made at 9-12½c per lb.; 60s, 12½-16c; small pails, 14-16c; No. 1 white comb reported sold at $4.50-5.50 per case; few, $5.75; No. 2, $4.00; buckwheat, $4.00 per case. Beeswax, 27c per lb.

NORTHEASTERN STATES — The buckwheat flow continues above average, of excellent flavor and quality. Fall flow from aster and other plants is also coming in. Northern Vermont reports bees working actively on honeydew, and gathering large quantities. Bees are rearing brood, and there should be ample young bees for the winter period. Honey is in greater demand than usual for the time of year. White clover has sold recently in ton lots at 10-13c per lb.; 60s, 10½-12½c; small pails 15-18c; buckwheat, 60-lb. cans or kegs, 9-9½c; few, 10-10½c; small pails, 10-15c. Sales of comb reported as follows: White, fancy, $4.50-5.00; No. 1, $3.84-5.50; few, $6.00-6.50; mostly around $4.50; No. 2, $3.50; buckwheat, No. 1, $3.00-3.50; clover and buckwheat mixed, No. 1, $4.80; No. 2, $3.60.

SOUTHEASTERN STATES—Drouth is very severe over most of the southeast except Flor-

ida. In southern Florida one of the rainiest seasons on record is reported. Prospects for a fall flow look well, and bees are working actively. Partridge-pea and bitterweed are furnishing a little nectar in Alabama; but on account of the drouth bees may not have sufficient stores for winter unless rain falls soon. Bees are breeding up well for winter. Rain is badly needed in Georgia to revive Mexican clover and other plants, so bees can get enough to winter on. Queen yards are suffering. Except in the eastern and southern parts of the state, Louisiana reports a practical crop failure, with no honey coming in. Amber honey has been selling in large lots in barrels at 7c per lb.; tons, 60-lb. cans, 7½c; light amber, tons, 12c; small pails, light amber to white, 13-15c; chunk, 10s, 12-16c per lb.; wax, 30-35c per lb.

PORTO RICO—The situation has recently shown considerable improvement, and honey has been coming in more freely, so that prices in some markets in the United States reported dropped 22c per gal. in a few weeks. Some beekeepers are holding for better prices.

CUBA—Beekeepers in some sections of the island expect a normal crop; but other sections are in poor condition due to lack of moisture. Little honey now available, although demand

(Continued on page 685.)

Report of Actual Honey Producers

Early in September we sent the following questions to actual honey producers:

1. What is the average yield per colony corrected to date this season in your locality? (a) Extracted honey? (b) Comb honey?
2. How does this compare with the average yield over a period of years for your locality? Give answer in per cent.
3. What per cent. of the honey produced in your locality has already left the hands of the producers?
4. At what price has honey been sold, or contracted for, if any, in large lots (carload or less) in your locality during the past month? (a) Extracted honey, per lb.? (b) Comb honey, fancy and No. 1, per case?
5. What are prices when sold to grocers in case lots? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per case?
6. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per section?
7. How is honey now moving on the market in your locality? Give answer in one word as slow, fair or rapid.

State.	Reported by:	Av. Yield per colony. Ex.	Comb.	Aver. Pct. of Yield.	Crop Sold.	In large lots. Ex.	Comb.	In small lots. Ex.	Comb.	Retail prices. Ex.	Comb.	Movement.
Ala.	W. D. Achord	30		87		$.09½				$.80		Fair
Ala.	J. M. Cutts	50	0	100	60	.07¼				.75	$.30	Fair
Ala.	J. C. Dickman	45		100	95			.80		1.20		Fair
Cal.	M. H. Mendleson					.11¼			$6.00	1.15	.35	Slow
Cal.	L. L. Andrews	15		25						1.00		Slow
Cal.	M. A. Saylor	60	48	100	50			.65	5.00	.80	.25	Fair
Col.	B. W. Hopper	150	100	100	40	.09	4.00	.60	4.50	.80	.25	Fair
Col.	J. A. Green	120		125	5			.75	4.00	.90	.20	Slow
Conn.	A. Latham	55	40	90	10			1.05	6.50	1.25	.35	Rapid
Fla.	C. C. Cook	62		50	100	.07		.80		1.00		Rapid
Fla.	H. Hewitt	35		80	70			.80		1.00		Fair
Ga.	J. J. Wilder	70	40	100	60							Fair
Ill.	C. F. Bender		25	50	0						.30	Slow
Ill.	A. L. Kildow	75	75	150		.10	4.00		5.20	.85	.25	Fair
Ind.	Jay Smith	30		50	100					1.25	.35	Slow
Ind.	T. C. Johnson	50	35	50	25			.90	5.00	1.15	.33	Slow
Ind.	E. S. Miller	65	50	100	5			1.00	5.75	1.25	.30	Fair
Ia.	W. S. Pangburn	175	80	90				.75	4.50	.95	.28	Fair
Ia.	E. G. Brown	100		50	50	.10	4.00	.75	4.65	1.00	.28	Rapid
La.	E. C. Davis	50		50	50	.07¾		.75		1.00		Slow
Me.	O. B. Griffin	20	10	30	10			1.25	6.50	1.60	.35	Slow
Md.	S. G. Crocker, Jr.	35	25	80	20	.12	4.50	1.00	5.50	1.25	.30	Slow
Mass.	B. N. Gates			70	13						.45	Fair
Mich.	F. Markham	60	50	60	0		5.00	.75		1.15	.25	Slow
Mich.	E. D. Townsend	60		100		.12						Fair
Mich.	B. F. Kindig	80		100	5			.80	5.75	1.00	.28	Fair
Mo.	J. H. Fisbeck	50		75	5			1.00		1.25		Slow
Mo.	J. M. Romberger	55	55	100	10	.08	4.50	.60	5.50	.95	.33	Slow
Neb.	J. H. Wagner	150	125	85	10	.11	3.60	.70	4.50	1.00	.25	Fair
Nev.	E. G. Norton	60		50	0							Slow
N.J.	E. G. Carr	40	20						6.00	1.25	.40	Fair
N.Y.	N. L. Stevens	90		112	50	.09		.70		.85	.25	Rapid
N.Y.	Adams & Myers	75		100	10					1.25	.30	Slow
N.Y.	F. W. Lesser	50	30	60	10	.11½	5.00	.70	6.00	1.00	.30	Fair
N.Y.	R. B. Willson	100	80	100		.11¼	5.15	.80	5.15	1.10	.28	Fair
N.C.	C. L. Sams	50	35	95	25	.12		1.00	4.80	1.25	.30	Fair
N.C.	C. S. Baumgarner		15	50	100			1.00		1.25	.35	Fair
Ohio.	R. D. Hiatt	60	35	40	20			1.05	6.00	1.35	.35	Fair
Ohio.	J. F. Moore	60	50	70	10	.12	5.00	.80	5.00	1.15	.25	Fair
Ohio.	F. Leininger	30		25		.12	4.80			1.00	.25	Slow
Okla.	Jos. Heucisen	20		20	5			1.20		1.50	.35	Fair
Ore.	H. A. Scullen	90		125				.80		1.00	.28	Fair
Pa.	D. C. Gilham	20	40	110	8			1.05	7.20	1.40	.42	Fair
Pa.	H. Beaver	110	45	100	5			.70	4.25	.80	.20	Slow
S.C.	E. S. Prevost		30		80				6.00	1.00	.30	Fair
Tenn.	J. M. Buchanan	10	0	10	100					1.25	.35	Slow
Texas.	H. B. Parks			50	100	.10		.70		.90		Slow
Texas.	T. A. Bowden	10		30	80			.80		1.05		Slow
Texas.	J. N. Mayes	50		75	100							
Utah.	M. A. Gill	184	90	90	0		4.00	.50	4.00	.60	.20	Slow
Vt.	J. E. Crane	60	45	120				1.00	6.50	1.25	.35	Fair
Va.	L. N. Gravely			30		.15		.75	5.00	1.25	.38	
Wash.	W. L. Cox	100	10	100	5					1.25	.30	Fair
Wash.	G. W. B. Saxton	50	57			.10		.60		.70		Slow
Wis.	N. E. France	85	40	105						1.00	.30	Fair
Wis.	E. Hassinger	110		115	10	.05		.80		1.00		Slow
Wis.	H. F. Wilson	80	50	100	5			.88	6.00	1.10	.35	Fair

XUM

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2½-pound Cans, in cartons of 100	$4.00 a carton
5-pound Pails, in cartons of 50	3.50 a carton
10-pound Pails, in cartons of 50	5.00 a carton
60-pound Tins, new, 2 tins per case	1.00 each
160-lb. Kegs (the ideal container for both buckwheat & clover honey)	1.20 each

Glass Jars with Gold-Lacquered Caps

16-ounce honey capacity, 2 dozen per carton	$1.20 per carton
3-pound or quart capacity, 1 dozen per carton	.90 per carton

Special Hazel-Atlas Tall Jars, Including Caps

8-ounce honey capacity, 2 dozen per carton	$1.05 per carton
16-ounce honey capacity, 2 dozen per carton	1.35 per carton
2-pound honey capacity, 1 dozen per carton	.95 per carton

Honey for Road Stands

White Clover, 60-pound tins, crystallized	13c per lb.
White Clover, 60-pound tins, liquid	14c per lb.
L. A. Southern, 60-pound tins, liquid	12c per lb.

BEE SUPPLIES

Special Bargains for October

8-frame Diamond Hives (wood cover)	$10.00 per 5
10-frame Diamond Hives (wood cover)	11.00 per 5
8-frame Stirling Hives (metal cover)	12.00 per 5
10-frame Stirling Hives (metal cover)	13.00 per 5
10-frame Jumbo Hives (metal cover)	14.00 per 5
10-frame Jumbo Hive Bodies W. F	6.50 per 5
10-frame Jumbo Hive Bodies Empty	3.75 per 5
10-frame No. 3 style Comb Honey Supers for 4 x 5 x 1⅜" sections	6.50 per 5
4 x 5 x 1⅜" Sections	4.50 per 500
Foundation, medium	25-lb. lots, 55c lb.; 5 lbs., 60c lb.
Foundation, thin	25-lb. lots, 65c lb.; 5 lbs., 70c lb.

HONEY CONTAINERS

FRICTION-TOP PAILS AND CANS

	25	50	100	200	500	1000
2½-pound cans	$1.30	$2.40	$4.15	$8.25	$20.00	$39.00
5-pound pails	2.00	3.50	7.00	13.75	33.00	64.00
10-pound pails	2.90	5.00	10.00	19.75	48.00	94.00

FIVE-GALLON CANS

60-lb. Cans, 2 cans to the case f. o. b. Lansing.

Per case	$ 1.20
10 cases	11.50
25 cases	28.50

60-lb. Cans, 2 cans to the case f. o. b. cars Detroit

50 cases	$ 51.00
100 cases	98.00
200 cases	192.00

5-gallon cans in bulk, $9.25 per crate of 24.

Above pails are packed 50 to the carton and will keep bright and clean until time of using. 2½-pound cans, 100 to carton. Above prices are f. o. b. cars Lansing.

A grade tin paste for labels, per pint, 25c; per quart, 45c; per gallon, $1.50.

GLASSWARE

	1 case	10 cases	30 cases
6½-ounce tumblers, 48 to case	$1.35	$13.00	$37.00
16-ounce round jars, 24 to case	1.35	13.00	36.50

CORRUGATED-PAPER SHIPPING CASES

These cases provide an inexpensive package for handling comb honey. They are partitioned so that each section is in its own compartment.

	10	50	100
24 4¼x4¼x1⅞-inch Sections	$2.20	$10.75	$21.00
24 4¼x4¼x1½-inch Sections	2.00	9.75	19.00
24 4 x5 x1⅜-inch Sections	1.90	9.25	18.00

ADHESIVE

We furnish adhesive for sealing the corrugated paper shipping cases as follows: 1 pint, 15c; 1 quart, 20c; 1 gallon, 60c. Order one pint of adhesive for each 10 cases, or 1 gallon for each 100 cases purchased.

We also furnish lithographed honey pails, cartons for comb honey, and display and wood comb-honey cases.

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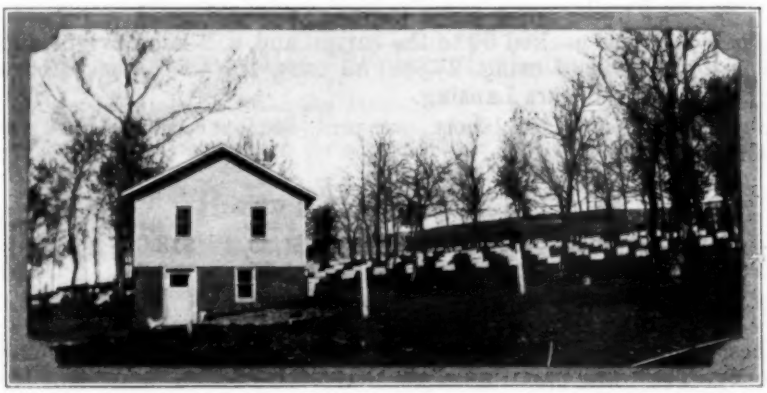

The Beals home yard is typical of all the Beals apiaries, neat, serviceable, and above all "produceable." Beals is a "whale for work" and he surely stacks up the cans at the end of a season. His apiaries are noteworthy in a region where noteworthy apiaries are the rule.

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Write for Quotations and Shipping Tags.

GLEANINGS IN BEE CULTURE

OCTOBER, 1925

EDITORIAL

OUR CORNERSTONE

REMEMBER at all times that improved bee culture is our end and aim, and we trust no one will hesitate to give any facts from experience because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "introductory" in the first issue of Gleanings in Bee Culture January 1, 1873.

W. J. NOLAN, one of the workers in the bee culture laboratory of the Bureau of Entomology, Washington, D. C., has been making a special study of the articles published in foreign bee journals for several years, being able to read most of the various languages in use in Europe. He has also traveled extensively in Europe, visiting beekeepers, editors of bee journals, and scienitfic men engaged in the study of the honey bee. This journal is fortunate in having made arrangements with him by which he will review the foreign bee journals each month and supply our readers with the most important items of interest from this great mass of literature. See pages 661 and 662.

Review of Foreign Bee Journals

ACCORDING to an article by Dr. Edwin E. Slosson, in the June issue of The Scientific Monthly, a new kind of sugar may appear on the markets some time in the future that may be cheaper than cane sugar or beet sugar. This new sugar is our old friend levulose, one of the sugars of honey—in fact, the one which gives to honey several of its desirable qualities. A new process has been worked out by which levulose in crystalline form may be made from the Jerusalem artichoke. Instead of starch, the artichoke contains a similar substance known as "inulin." Starch treated with warm acidified water turns to dextrose, while inulin treated in the same way turns to levulose. On account of the tendency of crystalline levulose to absorb moisture from the air and thus become liquid, it would, if produced commercially, no doubt be used instead of glucose in making cheap table syrups.

Another Competitor of Honey

DOCTOR BRUCE LINEBURG, professor of Biology at Lake Forest College, Lake Forest, Ill., makes a startling announcement on page 669 of this issue regarding a strain of bees apparently immune to American foul brood. If such a statement had been made by a less careful observer, many would be inclined to doubt the accuracy of the observation; but, coming from Doctor Lineburg, there can be no such doubts, even though it does seem too good to be true.

Breeding Immunity to American Foul Brood

THE question is often asked if it would not be just as well to wait until spring to feed colonies that are short of stores now, provided there is enough honey in the hives to last until the weather is warm enough in the spring to feed. This may be all right in the south where the quality of stores makes but little if any difference in the way the bees winter, or even in the north provided the stores already in the hive are of the very best quality. Too often, however, the natural stores are not good enough for winter in the north. If colonies that are short of stores now are left until spring before being supplied, they are compelled to winter on natural stores and build up in the spring on sugar syrup if honey is not available for this purpose. This is just the reverse of what is should be for best results.

Feeding in Fall or in Spring

THE question is sometimes asked if the publication of the crop and market conditions in the bee journals is not in some cases a detriment to the industry. In bringing up this question it is pointed out that the publication of reports of honey being sold in carload lots at western points at 8½ to 9 cents a pound results in eastern beekeepers selling their white clover honey at prices only slightly above the price in carload lots at western points.

Value of Crop and Market Reports

In interpreting the market reports it must be remembered that honey at 8½ to 9c per pound in carload lots at western points is equivalent to 10 to 10½ cents per pound at eastern points, and that this in turn is equivalent to at least 12 to 13 cents in smaller wholesale lots on account of the greater cost of selling in this way. The retail price must then be several cents per pound higher on account of the added cost of selling in still smaller lots. These differences are set forth on our market page where the car lot, wholesale, and retail prices are given for the various localities. Another thing that must be taken into consideration in interpeting the market quotation is that of the quality of honey produced in various localities. For instance, a quotation from the buckwheat region would reflect buckwheat honey prices, while a quotation from a good white clover locality would be considerably higher on account of the better demand for the lighter-colored honey. It would be well if all of these differences could be explained in the market reports so that those who have not made a study of the markets would understand the reasons for the variation in prices.

No doubt the bee journals would all be glad to omit the honey market reports if the editors were convinced that this would not result in a chaotic condition of the honey market and the tearing down of a structure which has required years to build up, since these reports occupy valuable space in the journals that might be profitably employed otherwise. The information on market conditions published by the various bee journals is intended to benefit the honey-producer. If it does not do this it would be folly to publish it.

In the case of the important agricultural products, long before the government began collecting and disseminating information in regard to market and crop conditions the dealers had worked out their own system for doing this. The dealers having this information had an undue advantage over the producers who did not. The Department of Agriculture then saw the necessity of furnishing the producer with crop and market statistics in order that he might sell or withhold his product in accordance with the information available. Gradually the Department of Agriculture has extended its crop and market service until now honey is included in the list of products. Before the Department of Agriculture included honey on its list the bee journals were the only means of collecting and publishing information for producers.

It must be remembered that the dealers, having more at stake than the producers, will collect all available information in regard to crop and market conditions whether the producers do or not. If the bee journals and the Department of Agriculture were to cease publishing such information, the dealers would have the advantage of this information while the producer would not. Judging from conditions existing before the information for producers was published, to withhold information from the producer would result in chaotic conditions in the honey market which would send the prices tumbling to lower levels. Much of the lack of stability in the honey market now is a result of a lack of information in regard to crop and market conditions on the part of the producer.

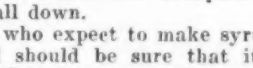
AS HAS already been mentioned in previous issues, the Gleanings experiments in feeding sugar syrup for winter stores have cleared up the confusion in regard to the need of acid in making feed for winter. Many beekeepers are successful year after year in wintering bees on sugar syrup in which acid was not used without trouble from crystallization, while others have found that such syrup crystallizes almost solid in the combs soon after being fed. This difference is brought about largely by the method of feeding. When syrup is carried down and stored rapidly crystallization is liable to occur soon after the syrup is stored; but if syrup of the same consistency is stored slowly, crystallization does not take place. Apparently a greater proportion of invertase is added when the syrup is handled slowly.

Making Syrup Without Acid

Syrup made of two parts of granulated sugar to one part of water or slightly thinner, which is allowed to cool before feeding, and which is fed in a friction-top pail feeder having only about 30 holes in the cover, is usually sufficiently modified by the bees in handling so that there is no trouble from crystallization, while syrup of the same consistency given to the bees while still hot, in a feeder giving a large number of bees access to

the feed, so that it will be stored rapidly, is almost sure to crystallize in the combs within a few days after being stored. Again, syrup that is slightly heavier than exactly two parts of sugar to one part of water is liable to crystallize soon after being stored in the combs as well as in the feeder before the bees are able to take it all down.

Those who expect to make syrup without acid should be sure that it is not heavier than two parts of sugar to one part of water and should feed it in such a manner that the bees handle it slowly instead of rapidly. This can be accomplished by allowing it to cool before feeding and using a friction-top pail feeder having only about 30 holes in the cover. Those who desire to feed the bees rapidly, on the theory that less bee energy is consumed during the process of feeding, will find it necessary to add acid in order to prevent crystallization.



A Non-Crystallizing Sugar Syrup

IN storing their food for winter in such a manner that it will keep for some time honeybees have been compelled to solve the problem of preventing fermentation on the one hand and crystallization on the other. If the stored product is too thin it is liable to ferment and if ripened to the proper thickness to prevent fermentation it becomes a super-saturated solution and is liable to crystallize. The bees have solved the problem of preventing fermentation by evaporating off the greater portion of the water and sealing the honey to prevent it from becoming thin again by absorbing water from the atmosphere. To prevent crystallization they add a substance called invertase, which so modifies the sugar content of the honey that crystallization does not, as a rule, take place for some time. In this way bees are able to store their food so that it will not soon deteriorate under the ordinary conditions of the hive during the winter.

The chemist explains that the invertase added by the bees changes sucrose, which is the sugar present in nectar, to levulose and dextrose, the two sugars found in honey. If the process of inversion is stopped too soon, so that a large percentage of sucrose is left, the sucrose will crystallize out, while if inversion is carried almost to completion the dextrose will crystallize out. This helps to explain why granulation often takes place even in well-ripened honey in the comb after it has been stored for a long time. If the process of inversion could be stopped when about half completed, honey would remain in liquid form for several years even in cold climates; but the bees have no way of stopping the process by their method of inversion.

The chemist has gone a step further than the bees and is now able to regulate the degree of inversion, stopping it where he chooses. This makes it possible to make a non-crystallizing syrup that is as heavy as honey. There are two methods by which the chemist brings about inversion, that of adding invertase as the bees do, and that of adding acid and applying heat, which has been used for years by beekeepers in making sugar syrup to feed the bees for winter.

The Bureau of Chemistry, Washington, D. C., has worked out a formula for making a non-crystallizing sugar syrup for feeding bees for winter, which is published on page 669 in this issue. The syrup made after this formula results in the exact degree of inversion required for a non-crystallizing syrup, but when it is fed to the bees they add invertase as usual so that the process of inversion is again started. This makes it impossible to have sugar syrup, made after any formula, stored in the combs with the exact degree of inversion necessary for a non-crystallizing syrup. In extensive experiments conducted by Gleanings in Bee Culture during the past several years it has been found that the stored syrup is partly inverted within a few hours after the bees have carried it from the feeder to the comb, and that inversion continues slowly throughout the winter or until the process has been practically completed.

Since partially inverted syrup remains liquid longer than completely inverted syrup, and since it is impossible to have syrup stored in the combs by the bees without the process of inversion going on after storage, it would seem better to mix only enough of the invert syrup with the uninverted when using the Bureau of Chemistry formula to prevent crystallization in the feeder and when first stored in the combs. The experiments conducted by this journal over a series of years indicate that if crystallization does not take place during the first few days after the syrup is stored in the combs the process of inversion is then sufficiently advanced to prevent crystallization for some time, usually during the winter. If the syrup is inverted to too great a degree when fed, the invertase added by the bees may carry the process of inversion so far that there will be trouble from granulation in the spring on account of the high percentage of dextrose, although this should not be as serious as crystallization of the sucrose in the fall.

PROPER THICKNESS OF PACKING

By A. Gordon Dye

The Laws Governing the Production and Dissipation of Heat in the Hive

During the period when brood is not being reared, bee energy is used and honey is consumed largely to produce heat. As there is no evidence that bees can live for any length of time without eating, there must be a certain amount of honey consumed to maintain life, but any consumed in excess of this minimum constitutes waste not only of honey but of bee vitality. There may be several causes for increased consumption of stores, but the chief one is the variation of temperature in the air surrounding the cluster. Wintering bees then becomes a problem of producing conditions such that the heat loss of the hive shall most nearly balance the heat produced by the bees in their least active state. Just what is the minimum amount of heat a pound of bees generates in twenty-four hours has never been determined, but it is the hope of the writer that this article may stimulate research in this line by those in position to get this data for us.

Heat escapes from the hive in two ways: by convection, that is, by warm air being forced out through cracks and crevices by the pressure of cold air outside; and by conduction through the hive walls and whatever packing is used. The interchange of air through the entrance is the most common loss by convection, but this can easily be overcome by placing the entrance several inches below the top of the bottom packing and connecting the brood-chamber with the outside by a vertical beeway. Controlling loss by conduction is the object of packing, but to do this intelligently we must first know the amount of heat being produced per day under different conditions, and then we must know how to figure the rate of heat loss with any kind of packing, with any size of hive, and for any temperature outside. The size of the colony, the size of the hive, the kind and amount of packing, and the mean temperature of a given locality are all factors in heat production and loss, and we must consider them all in our measurements if we are to secure the proper balance.

Heat Production

It is self-evident that there can be no more heat produced in the hive than is contained in the honey consumed, and there is good reason to believe that practically all of the heat contained in the honey is liberated when the honey is oxidized in the bodies of the bees. This being true, we can measure the heat being produced from day to day by the loss in weight of the hive and contents. If we know the weight of the bees, we can determine the heat-producing capacity of bees under varying conditions. This knowledge is of the utmost importance if we are to make any progress in beekeeping.

The heat in a pound of honey has been scientifically determined and is, in round numbers, 1500 calories. The calorie, for our purpose, is inconvenient, so we will use the British thermal unit, hereinafter abbreviated to B. T. U., as this unit is based on the common units of measurement, the pound and the degree Fahrenheit. As a calorie equals four B. T. U.'s, a pound of honey contains about 6000 B. T. U.'s and an ounce 375 B. T. U.'s. Three cases of cellar wintering, for which the figures have been published, give the average daily loss in weight per colony as .5864 oz., .93 oz., and 1.65 oz., which, expressed in heat units, gives us a daily average of 220 B. T. U.'s, 345 B. T. U.'s, and 619 B. T. U.'s, a wide range, but of little value scientifically, as we do not know how many pounds of bees were engaged in producing this heat nor what the external conditions were which might have caused this wide divergence of results.

Heat Loss by Conduction

Different materials vary widely in their heat conductivity, but most of the materials in which we are interested have been measured and the results published, so that all we have to do is to learn how to use these tables. If the temperature inside and outside the hive is the same, there will be no movement of heat; but just as soon as there is a difference of temperature heat begins to go from the higher side to the lower side through the intervening hive walls and packing.

The amount of heat that will pass through in twenty-four hours will depend upon the difference of temperature, the inside area of the hive, and the kind and thickness of the material through which the heat must pass. The rate heat will pass through a square foot of a given material is known as its conductivity. In the tables of conductivity are given the heat in B. T. U.'s that will pass through the material one foot square, one inch thick, in one hour's time, with a temperature difference of one degree Fahrenheit. As the day is as small a unit of time as we are interested in, we can multiply the rate given in the tables by 24 and so have the daily rate. As the rate of heat movement varies for any given

substance inversely as the thickness, we will have to divide the 24-hour rate by the thickness in inches to give us the conductivity of our particular insulating material.

If we have 4 inches of dry sawdust inside of a packing-case, our problem will work out like this: conductivity of sawdust given as 10 B. T. U.'s per day, two thicknesses of ⅞-inch boards with a conductivity approximately equal to one inch of sawdust, so the conductivity of our packing is 10 divided by 5, which equals 2 B. T. U.'s per square foot. If we are using a single Langstroth hive our inside area is about 8 square feet, and if the temperature inside the hive is 45° F. and outside 25° F., we have a difference of 20 degrees and our heat loss per 24 hours will be 2 x 8 x 20, or 320 B. T. U.'s. From this it is evident that if we add a second Langstroth hive body we will have our inside area 12 square feet, and we will have 2 x 12 x 20, or 480 B. T. U.'s loss per day. If the temperature drops to 5° F., we will have 2 x 8 x 40, or 640 B. T. U.'s loss with a single L hive, and 960 B. T. U.'s loss with a two-story L hive, provided, of course, that the inside temperature remained uniform at 45° F. But in all probability the bees would cluster more closely, retaining more of the heat in the cluster and allowing the temperature inside the hive to gradually fall to a point where the heat produced and the heat lost would balance.

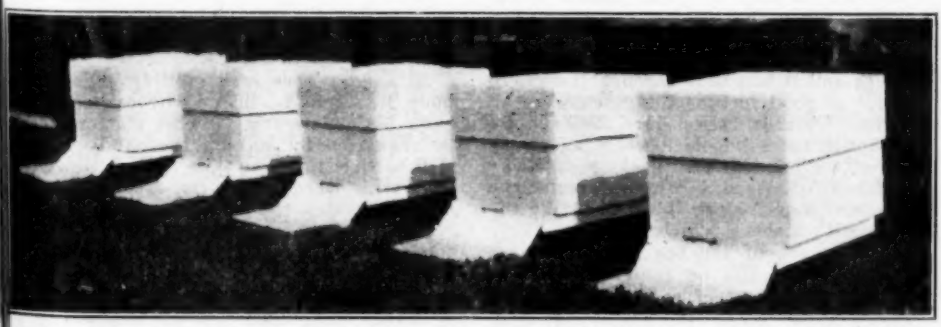
Equally interesting and important are the results of a rise in temperature. If our colony of bees is of such strength that it must consume enough honey daily to produce 320 B. T. U.'s to maintain life, and the temperature outside rises to 45° F., then heat must accumulate in the hive until it reaches 65° F., as it takes a 20-degree difference to carry off 320 B. T. U.'s without artificial ventilation. This will explain why heavy packing has not always proven satisfactory in moderately warm climates and why certain beekeepers who have extra strong colonies find the bees hanging out after the fall packing is done.

Since the brood-rearing temperature is about 95° F., and the mean temperature of April in this locality is 55° F., it is evident that the best temperature for the inside of the hive will be as much above the average outside temperature as is the case in January, and consequently we must have as much insulation in April as in January in order to keep the heat loss at as favorable a figure.

Until some of our research workers have determined the amount of honey consumed per pound of bees in a normal colony when it is least active, and the point where the daily consumption per pound indicates trouble ahead, we will be hampered in our efforts to provide the right amount of insulation to suit the conditions we have.

Rochester, N. Y.

[Some work has already been done to determine the minimum amount of heat generated by a colony of bees when in a quiescent condition in winter. In the work done by Milner and Demuth in 1915, which is recorded in part in United States Department of Agriculture Bulletin No. 998, a respiration calometer was used to measure the heat output of a colony of bees and at the same time measure the amount of carbon-dioxide and water vapor given off by the bees as well as the oxygen consumed. In one of these experiments a colony of 9635 bees by actual count gave off 688 calories of heat during a period of 10 days, or an average of 68.8 calories per day, when the bees were in a state of quiescence. According to Mr. Dye's figures this amount of heat would readily pass through the walls of a single-story standard hive surrounded by four inches of sawdust when the difference between the temperature inside the hive and that outside is about 17° F., or in the case of a two-story hive when the difference in temperature is about 12° F.—Editor.]



Even in double-walled hives there is a constant flow of heat through the heavy walls during cold weather.

TRANSPORTATION OF QUEEN BEES

By Allen Latham

Several Important Factors Affecting the Safety of Queens in Transit

It is a fact to be lamented that a queen bee, no matter how pure her origin, how careful her rearing, nor how correct her mating, has no actual value until she is installed in a colony of bees. She may be sold for one dollar or for ten dollars, it matters not—she has no real value until she heads a colony. Countless thousands of queens of potential excellence with the best have never acquired actual value because of some mishap between the time they started laying in some nucleus and the attempt to install them in permanent colonies. I doubt if there is any other commodity which carries less assurance of ultimate usefulness than does a queen bee. Like all the excellent things in life, queen bees involve much cost and care, and throughout their careers there lie mishaps of all sorts. The vigorous young queen all ready to be mailed to a customer confronts the worst part of her career.

I once thought the time she is in the mail the most dangerous part of the life of a queen. Unquestionably a queen bee can be seriously injured by being in a mail-sack which is hurled from a train traveling thirty miles an hour. There is no question at all that a caged queen can be ruined by lying in a mail-box exposed to a hot June sun. There is equally no question but that she can be seriously impaired by a long trip in cold weather with too few escorts and too little protection. In spite of all these possibilities I am beginning to doubt that the transit through the mails is the most dangerous part of a queen bee's career.

Still, queens are injured in the mails and it behooves us to do what we can to insure them against such injury. Fortunately this insurance is cheap and simple, and its very simplicity makes it the more strange that so few queen-breeders pay any attention to this matter. Only today I received ten queens from the South and it was only through the providence of good fortune that they were all right. The ten cages were fastened together in one solid block weighing nearly or quite a pound. This package was like a block of wood. Slipping from the hands of a mail clerk it would strike the floor with a shock which would be likely to snap each of the ten queens against the wooden walls of their apartments. How hard a snap can a queen stand? Are her ovaries made to withstand such knocks?

Now it so happens that I had had considerable correspondence with the firm sending these queens. Last year they sent one lot which arrived on a morning when the temperature was close to freezing. The mail-carrier had carried the package exposed on the seat of his flivver for several miles. The queens and attendants were stiff with cold. I asked the firm to wrap all my packages in corrugated paper thereafter, and they promised to do so. Yet today the package came in their regular way. The firm rears excellent queens, but from 40 to 90 per cent of all the early queens I get from them are superseded before the middle of the summer. I buy only very early in the season from them to help me out in my package and nucleus trade, putting their queens in where I remove my own to sell. Possibly later on their queens would show longer lives.

Three things must be guarded against in the transportation of queens. They are insufficient and improper food, violent changes of temperature, and rough handling. The first of these is the most difficult problem of the three. It is one which will stand much investigation on the part of our college bee-departments.

Queen-Cage Candy Made in Accordance with Weather Conditions

Good candy is probably the best available food at present. When one has royal jelly available he will do well to mix this with the honey into which the powdered sugar is kneaded. I have found that in my export trade the presence of royal jelly has made a marked difference in the longevity of queens carried to England. Since using it I have not lost one single queen in that rather long trip and their vitality seems to be little impaired by the journey. But royal jelly is not always available. Often the best we can do is to make the candy conform to the weather conditions.

Attendant bees in a mailing cage are more likely to be injured by overeating than by under-eating. This matter can be regulated by making the candy very stiff so that the bees take it very slowly. For trips through warm and through moist climates the candy must be very stiff. Candy soft enough for a trip of a thousand miles in the United States will be too soft for a trip across the ocean. On the other hand, candy hard enough to carry bees well on an ocean trip would let the bees starve on a cold trip

through the dry air of the continent. So as far as possible I regulate the candy, making it hard for warm and moist conditions and making it soft for dry and cold conditions. This candy is made by stirring XXXX sugar into hot honey. Care must be used not to have the honey too hot. I test the sugar dough on my cheek while making the candy. If it is unpleasantly hot I know that I am reaching a danger line. Bees will die if forced to eat candy made with the honey so hot that the sugar itself fuses. The sugar must retain its granular form and the honey simply binds the tiny particles of sugar together. One can make the candy with cold honey, but it is very difficult and a very slow job.

From five to six ounces of honey is mixed with one pound of the XXXX sugar. Only well-ripened honey is used, and if it must be boiled on account of possibility of disease the water added must be evaporated until the honey is normally thick and heavy. Five ounces of honey make a dry candy, six make a moist candy, five and one-half make an average candy. These statements are true only when a high-grade honey of heavy body is used.

Selection of Attendants for Queen

The cages are stocked with this candy and then as needed are taken to a colony of queenless young bees and each cage is given ten to fifteen nurse bees, according to the need—in colder weather fifteen, in hot weather ten or eleven attendants. Only by observation and practice can one select the right attendants. There is no more important part of queen-bee shipment than this selection of the attendant bees. Mr. Doolittle used to advise taking bees which had just returned from their first flight. This was splendid advice, but not always easy to follow. He also stated that bees which at once bob their heads into cells to fill with honey are the ones to take. This is only a partial truth and is no way for a greenhorn to adopt. So far as I know, one must study bees until he can recognize at sight bees from five days to twelve days old and select such. If he can not do this let him set a comb of emerging brood into a warm place and as the days go by study the bees. As there will be no old bees at all present he can acquire certain knowledge.

The cages, stocked with candy and attendants, are taken to the mating yard and there each is given a young queen which has been laying from one to three days. These are then taken to the home and packed for mailing.

Packing Queen-Cages in Corrugated Paper

For several years I packed all my queens in excelsior and paper, making small pillows, so to speak. Of late years I have adopted corrugated paper. This was occasioned by the fact that my excelsior-wrapped queens were delayed in the customs when shipped to Canada. The cages had to show. So now I cut corrugated paper into strips and cut the strips into convenient lengths. A single strip is wrapped about a cage when only one queen goes to one address. But when two or more queens go, small pieces of the corrugated paper are placed between the cages and then all are rolled in a bigger strip of the paper. Each package is securely tied and addressed.

The great advantage of this method over the customary one is that the cage or cages if dropped fall more slowly and alight with little shock. The bulk is much larger, but the weight nearly the same. This insures the queens against injury by rough handling. It also protects against heat and cold. Bees thus wrapped will be warm and lively when opened up.

It may not seem so necessary to protect against heat, but most of my losses in the mails have been from heat and not from cold. A mail-sack lies for hours against the wall of a car, against which wall the sun beats. The wall gets very hot. If a cage lies close to the side of the mail-sack which is against the wall of the car, the queen in that cage will die from heat.

In a shipment of a dozen queens wrapped in excelsior and paper, three in one end were all dead and their attendants also. The others were all in good shape. I could account for the fact only on the supposition that one end of that package lay against the heated side of the mail-sack.

We do all we can to get the queen to her owner in good shape. We can do no more. The queen is then at the mercy of the owner and his bees. Until he gets her safely introduced she carries no real value. That is one of the soundest reasons why queens should be paid for in advance. Who wants to pay for a queen lost in trying to introduce her? The more I study the matter the more I have come to believe that failure to get queens correctly—not safely—introduced is the cause of the vast number of useless or mediocre queens. The matter of queen-introduction is related to the matter of queen-rearing and for that reason will be treated in the final number of this series.

Norwichtown, Conn.

SIDELIGHTS ON WISCONSIN TOUR

By H. H. Root

A Summary of Dr. Sturtevant's Address on Diseased Combs. The Water-Formalin Solution

The tour of beekeepers in southeastern Wisconsin, August 10 to 14, 1925, was in many ways a great surprise to me. I had supposed that there might be a dozen automobiles that would complete the trip, supplemented by loads of local beekeepers at each point visited. There were thirty automobiles most of the time, practically all of them going the whole route. There was therefore a good crowd at every point, and the trip as a whole seemed very much worth while to me. The apiaries visited were varied, all the way from a few colonies in a back yard up to Mr. Aeppler's large apiary at Oconomowoc, consisting of more than five hundred colonies. We visited one small yard where there were perhaps a dozen colonies, two happily housed in old washing machines, several in kegs and barrels, one in the cornice of the house, etc. I understand that a few days after the tour these bees were ordered transferred into equipment permitting inspection of the colonies.

Among the many features of this tour was a very interesting address delivered by Dr. A. P. Sturtevant, of the Bureau of Entomology, Washington, D. C., on the subject, "Disinfecting Foul Brood Combs." This address was given in the afternoon of the first day of the tour at the home of J. L. Robinson, three miles northwest of Janesville.

Dr. Sturtevant paid a tribute to Dr. Hutzelman, saying that he deserved a vote of thanks for having perfected a practical means of disinfecting combs containing American foul brood—a method so certain in its results that almost no return of the disease has been noticed when the standard Hutzelman solution was used.

Experiments With a Cheaper Solution

At Washington, experiments have been conducted with a cheaper solution, consisting merely of water and formalin. The method of procedure is to select a comb known to contain disease, put a small piece of it in the Hutzelman solution for the requisite number of hours, and afterward in an environment where spores, if living, can grow and develop. The test was repeated with a piece of the same comb in a water-formalin solution, the efficiency of this solution thus being given a comparative test.

Dr. Sturtevant finds that the water solution, not being as penetrating as the alcohol solution, does not go through the capping over brood. It is necessary, therefore, in using the water solution, to make sure that every cell of foul brood is uncapped. This is not easy, owing to the fibrous material in the cocoons in the brood-cells and the consequent danger of closing the opening of the cells if the knife is not exceedingly sharp. He finds a plain sharp knife separately dipped in boiling water better than a steam-heated knife. Because of the fact that the water solution is less penetrating Dr. Sturtevant recommends allowing a somewhat longer time than that recommended by Dr. Hutzelman with his solution.

Not Necessary That Cells Be Completely Filled

Asked whether the water solution does not present more difficulty by reason of the fact that the water is not as likely to completely fill the cells as the alcohol, Dr. Sturtevant replied by saying that in all probability the formaldehyde gas is strong enough, even though the liquid does not completely fill the cells, to accomplish the work of disinfecting thoroughly.

Doctor A. P. Sturtevant of the Bureau of Entomology, Washington, D. C., addressing the beekeepers on the Wisconsin tour.

Mr. Corkins, of Wyoming, has pointed out that, when soaking combs in the Hutzelman solution in cold weather, formalin may be left in the form of a solid, necessitating washing the combs after the treatment. Dr. Sturtevant offers this caution: In case the combs are to be washed immediately after treatment it may be necessary to allow them to soak longer in the Hutzelman solution—perhaps another twelve hours. If the washing is not done the extra time is not

needed because the residue left in the cells keeps on working, so to speak.

While the Hutzelman solution (alcohol and formalin) becomes stronger as it is used, on account of the evaporation of alcohol, the water solution becomes weaker because the water does not evaporate as fast as the formalin is used up. For this reason it is advisable to add more formalin, say every five hundred combs.

of water, and about two-tenths of one per cent of some liquid soap. The result showed the soap solution to be no better than the plain water solution in the case of the sealed cell. There is also an objection to the soap as it is alkaline and therefore softens the wax somewhat.

Considering the necessity of uncapping every cell of brood, Dr. Sturtevant thinks that the added labor thus incurred comes

Skyscraper hives were found in some of the apiaries visited. Apiary of Joseph M. Barr, West Allis, Wisconsin.

Addition of Soap No Improvement

The addition of soap to the water has been suggested in order to make a solution that will more easily and quickly cover the surface of the wax. To test this theory a solution was made consisting of one part of formalin to four parts

very near making up for any saving affected by the use of the water instead of the alcohol. Furthermore, because so far the results have not been quite as satisfactory, the department is not ready to recommend unreservedly the water-formalin solution.

REMARKABLE BEHAVIOR OF BEES

By J. E. Crane

Some of the Carefully Made Plans in Regulating Affairs of the Colony

Riding with a boy many years ago he spoke up, "Does a horse have any think?" "Yes, my boy, horses can think. I once had a horse that was blind, but I could drive him for many miles from home and when I got back he would turn in at the gate about as accurately as I could. If turned into the pasture or meadow, he could find the place for water or the barn without difficulty. Yes, a horse can think."

Bees Take Note of Shortage in Stores

But I started to write about bees. Many, many years ago I had a choice colony of bees. I was very fond of this colony, and anxious to have the bees spread their brood in April. I think I must have opened that hive many times to see how they were coming on. All went well until about the first of May, when I observed that the rearing of brood had nearly ceased. What was the trouble?

I studied over this condition for some time until I noticed they were nearly out of honey. Oh, yes! they were afraid of starvation. I felt like taking off my hat to them then and there out of respect to their thoughtfulness. How mean I felt that I had not thought of it before and supplied what they lacked! Here reason was matched against instinct, and reason prevailed.

Bees are born mathematicians, but still there is much in the building of combs that requires thought, as the spac-

ing apart of their combs, the proper proportion of drone and worker cells, or how to change from one to the other in building the comb. Some bright bee-keepers have thought to compel them to rear only worker bees by cutting out all drone comb, but they will build in drone comb again. Or if a hive is filled with worker comb they will tear out some of it and build drone cells instead, thus outwitting their master.

Forethought in Superseding Old Queen

If they find their queen failing from any cause, they think before it is too late to rear another; and when they have built royal cells, the queen, good mother-bee that she is, lays eggs in them so that in due time there may be one to take her place. During warm weather they do not forget to guard the entrance to their hive against all sorts of unwelcome guests.

Indeed, there are many things that must be thought of during the busy season, from the rearing of brood and gathering of nectar and pollen to stopping every crack and crevice with propolis. For propolis they prefer that from poplar; but if this is not to be had, that from butternut will suit, or even the gum from pine or spruce. If none of these are at hand they do not give up but provide wax from their own bodies. It pays to think.

When a young bee first flies from the hive it turns and observes the entrance and front of its hive, as well as the surrounding objects, so that, as it returns from investigating the great world it has found, it can return safely to its home. How thoughtful! How many people have been lost by not taking this precaution!

Seek Sheltered Flight in High Winds

When they come to gather nectar freely they learn, if the wind is high, to fly low or seek some windbreak as a hill or a forest. If their flight takes them beyond a hill, they may fly around it rather than over it, paying little respect to the "bee-line." How many times have I traveled over hills where roads led when it would have been no farther to have gone around them; but those who laid them out had the "bee-line" idea and laid out the road straight without thinking.

Careful Preparations for Swarming

Swarming is the great event of the season with many colonies, and careful and thoughtful preparations are made. A plentiful supply of honey must be left for the young bees that remain. Scouts are sent out to find a suitable abode for the colony. Queen-cells are started and queen larvae reared and sealed over. The scouts report a hollow tree not far away. The day is propitious, and the bees pour out of the old hive by thousands with a note of joy and enthusiasm.

But hark! It soon changes to one of sorrow and grief. Their queen is not with them. In vain they search the trees, the weeds, and the shrubs. She can not be found, and back they all go to the parent hive to find out the trouble. The queen was so heavy with eggs she could not fly.

The next day they try it again and succeed; then after a short flight they cluster, perhaps to see that they are all ready for the great venture. Just then the old farmer, who has been watching them from his back door, brings out an old hive and shakes them in front of it. They soon discover it is about what they want and enter it with a good deal of ceremony and much flapping of wings.

But the hive was standing in the hot sun, and before many hours have passed the bees conclude that a home in the forest is to be preferred, and out they come even faster than they went in. Next morning the farmer discovers his loss and wonders what was the trouble. Had he been as thoughtful as the bees he would have given them shade.

But it does not always work out this way. There appears to be a difference of opinion about swarming, and queen cells are started and torn down, or a part of the colony leaves the old hive, and soon returns after swarming out.

As the season advances and the supply of nectar is cut off by autumn frosts, the bees can not help but think of the waste of honey consumed by the drones, and these worthless consumers are given to understand that their room is more desired than their company, and so they are driven out to perish in the cold world.

Sometimes Make Mistakes

So we see in the life of a bee the necessity of thinking and of choosing between two different ways. But, like ourselves, they do not always reason wisely. They will sometimes swarm just before a heavy thunder shower, or delay swarming until so late in the season that they can not gather enough stores for winter and then starve. Again, they may build more drone comb than is wise. I have known them to try to rear queens from drone eggs or larvae. But the fact that different colonies under the same conditions will pursue a different course shows how much they are governed by reason rather than instinct.

Middlebury, Vt.

UNIVERSITY HELPS BEEKEEPERS

By Dora Stuart

Experimental Work at the University of California is Solving Some of the Beekeepers' Problems

Earnest students everywhere are proving that "there is no royal road to learning." In his work as instructor in the division of entomology at University Farm, Davis, California, George H. Vansell is demonstrating over and over the truth of the old maxim in connection with his classes in apiculture. For knowledge in that branch, as in all others, is a matter of hard work performed in a spirit of open-minded investigation. Mr. Vansell approaches the subject of apiculture from the angle of experiment. He does not recommend anything. He merely records his observations and expresses his personal preferences.

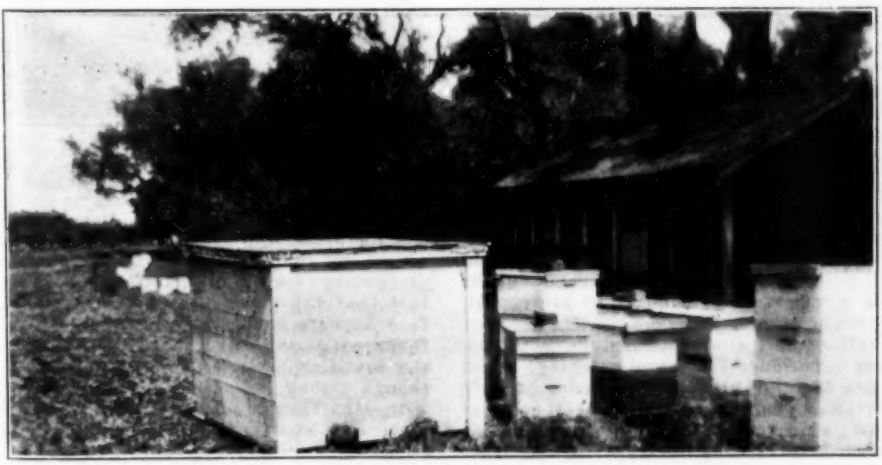
This method is carried out most painstakingly in the practical work of "bee" students. No two are required arbitrarily to do their work in the same manner, use the same type of equipment, or breed the same strain of bees, although they share the common objectives—healthy bees and good crops. At the beginning of the spring semester each student may select a colony of bees that belongs to him absolutely throughout the term, and he is responsible for its condition and product right from the start. There are no restrictions as to when or how often he shall "work" his colony, or where it shall be placed on the space allotted to the apiary.

That is why, when sitting on an upturned box on the veranda of a small building converted to the use of apiary students, and looking out over the university apiary watching for the swarms due and momentarily expected, nothing meets the eye that has become familiar through bee magazine illustrations. No regular rows of immaculate white hives of uniform size. Instead, the rows not only face in every direction but are placed at every conceivable angle. One group of four colonies was deliberately placed with backs together, forming a small court in the center of the group that faced the four points of the compass, presumably to ascertain in which position a colony thrives best. Many colonies were marked with sticks and clods placed on the lids in various positions and angles. Mr. Vansell knew no more about what it all meant than a casual observer, as each student used his own method to register conditions inside the hive.

If conditions are not right to secure to the students the experience necessary to manage a small yard successfully, difficulties are created so that they may be overcome. For example, if no foul brood exists, it is manufactured by deliberate inoculation and then treated by well-known methods, and by experimental methods as well. There are no buildings at the farm originally intended for apicultural purposes. Consequently the foul-brood disinfecting-chamber is the enclosed end of a porch made bee-tight by screening.

Experiments with Sterilizing Solutions

Here again experiment holds sway. Mr. Vansell has been trying out solutions



Part of the experimental apiary of the University of California.

of bromide, chlorine, and sulphur dioxide, with partially satisfactory results as to disinfection; but he does not recommen them, as they have not been tested under sufficiently varying conditions to insure their success for general use, and the cost is prohibitive. In class work he uses the alcohol-formalin treatment because it has been tested so widely and

Examining the brood in a comb that has been disinfected.

proven so successful. In the sterilization of other frames a water-soap-formalin solution is used with apparent success. The soap maintains the strength of the water solution by re-dissolving the precipitating paraldehydes or crystals continually settling at the bottom of the container and further loosens the scales and increases the penetration. The scales are sterile after treatment.

Dead larvae and scales in frames that have been immersed in the liquid can be shaken out quite easily, and the ground in front of hives where disinfected combs have been introduced is littered with cocoons and larvae that the bees have removed from the cells and carried out. The disease does not recur in combs so treated. He uses a liquid potash potassium soap such as is found in public lavatories. The cost of disinfecting combs, exclusive of labor, is estimated at from 1 cent to 2 cents a frame, but under no circumstances could it be more than 3 cents a frame.

Of course, students must have practical experience in swarm-catching, hence each spring a number of colonies are left to swarm naturally while other colonies are swarmed artificially and queens reared for spring increase in the most approved manner.

Testing Bees of Various Races

Among the colonies are to be found Carniolan, Cyprian, black, and Italian bees. Of the last-named race there are golden, leather-colored, and three-banded strains. Mr. Vansell has tried to keep as many strains as possible for the information of students; but he considers it a mistake, as the bees become hybridized so quickly that it is impracticable for scientific conclusions.

To test the honey-gathering qualities of the different strains, three scales are used, a colony of a different strain on each scale. Daily readings then show their comparative value as "go-getters" in the fields.

The Carniolan crossed with Italian is the largest bee—that is, it has the largest nectar-carrying capacity; but it is contended by some commercial beekeepers that the golden Italian is the busier bee and makes up for its smaller honey basket by a greater number of trips in a working day, and puts in longer hours.

Mr. Vansell's experiments with aluminum combs corroborates the general experience of commercial beekeepers, that it is difficult to get the bees to work on

The pile of material in front of the entrance is composed of scales and cocoons which the bees have removed from disinfected combs.

them quickly, especially in the brood-chamber, the queen being particularly averse to them. But he has a strong preference for the jumbo comb. The fact that the queen uses the larger surface appears to be a good argument in favor of giving her the extra space in the brood-chamber. The preference, although strong, is purely a personal one with Mr. Vansell. He has tried out all sorts and sizes of hive-bodies, covers, etc., and is still trying them out.

Among the university experiments

most valuable to commercial beekeepers and to those contemplating investing in apiary enterprises, are the study and introduction of nectar-producing plants, buckeye poisoning, and the manufacture of tarragon vinegar.

Introduction of New Nectar-Bearing Plants

In the star-thistle region of northern California, bee pasture between fruit and mustard bloom in May and the beginning of star-thistle flow about June 20, is a serious problem. Not all beekeepers can migrate to the hills during the dearth, and if they could the pasture would not be sufficient to support such a large number of colonies. To find a nectar plant that will flourish during that period has received considerable attention at the farm.

It was hoped that sheep's tansy might solve the problem and also provide a cover plant for orchardists, as it breaks

A crop of sheep tansy near Davis, Calif. The little girl shows the comparative height of the plant.

up easily under the disc. The plant was taken from this country years ago by the Germans, who have been growing it ever since in their country for bee pasture. But three years have proven that tansy, while a prolific nectar plant, is too succulent for our northern California climate, and dries down equally with other vegetation when the weather turns hot. It is at its height about the first of May. The dearth lasts till the middle of June.

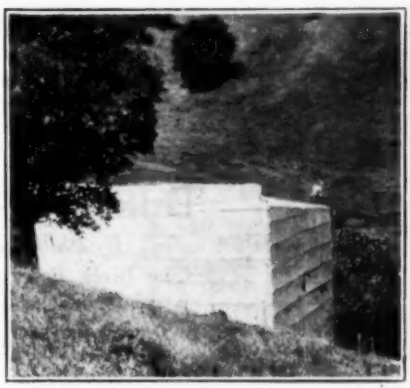
Many ornamental plants have been introduced at University Farm, but not with a mind as to their value as bee plants. Observations are made with a view to encourage their planting for bee pasture if they are of sufficient value.

Bees Poisoned by Buckeye

Buckeye poisoning, so positively affirmed and denied by beekeepers, has been thoroughly tested out on the university apiary, and the "ayes" have it. After three years Mr. Vansell has found it to be an absolute fact that buckeye will kill bees under certain conditions. To make doubly sure, bees were put in

Buckeye bee pasture on the mountain sides in California.

different locations where nothing was in bloom except buckeye. It being a deep-rooted plant, there was a world of bloom when all other vegetation was dried. The honey gathered from the buckeye was then brought back to University Farm, a distance of eighteen miles, and fed to the bees in the home yard with the same death rate among the bees as observed among the buckeye trees. The experiment was repeated several times in locations where there were mixtures of tollon (toyon, or California Christmas berry), clovers, wild lilac, and buckeye, and then where there was nothing but



A large tent 48 x 30 x 24 feet, over buckeye trees at Vacaville to insure nectar from that source only, in the University Buckeye poisoning experiments.

buckeye, always with the same results. Some of the symptoms among young bees, due to being fed buckeye honey, are death, winglessness, legglessness, dull coloring, and other grotesque deformities.

Making Tarragon Vinegar with Honey

Many beekeepers have made honey vinegar from refuse honey for home use,

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and even commercially, but Mr. Vansell has manufactured real "imported" tarragon vinegar so attractive to the epicure. One and one-half pounds of honey to the gallon of water is the base of the condiment. Any kind of honey may be used without specific difference in the flavor of the vinegar, although the color may differ slightly.

Then Mr. Vansell proceeds to put the "tare" in tarragon, by importing the plant in place of the vinegar. This plant, said by some to be a native of Russia, by others to have come from France, is now a naturalized American, and having found its way to University Farm from a seed house in the East, is of course a N. S. G. W. in good standing. It is a hardy grower and would not be unattractive as a low hedge plant. It belongs to the composite family, genus *Artemisia.*

The flavoring is an aromatic oil in the plant and leeches out in the vinegar. The crushed leaves should remain in the vinegar for several weeks before draining off. Honey tarragon is especially delicious on cold salads and fish, and, incidentally, can be manufactured at a cost much less than the price of the imported tarragon vinegar.

Beekeepers who have visited University Farm and have personal knowledge of the scope of Mr. Vansell's experiments will be the first to welcome from the university a bulletin covering in a more detailed manner an account of his work, and, more important, his own conclusions, when he shall have the time to prepare it.

Mr. Vansell's experiments are not confined to his classes at University Farm. As secretary of the California State Beekeepers' Association he has before him a large uncharted area awaiting scientific investigation and analysis. Secretaries are born. He is one of the elect and will be equal to the task. Already there has been a decided response to his co-operative suggestions, and through a closer touch between beekeepers and the Department of Agriculture both in the university and in the state government, which he has already established, California may yet live up to its claims as the leading apicultural state in the Union.

From the weekly reports of his students, and from a summary of the weekly reports required from each student at the end of the semester, Mr. Vansell is able to determine whether or not the "learning" acquired includes all the stages a colony of bees goes through in a season. He has also observed that the majority of students are more interested in the biology of the bee than in honey production.

But whether or not his students are agriculturists interested in bees, or embryonic apiculturists interested only mildly in agriculture, one result is certain. Farmers and beekeepers are bound to come to a better understanding. They may even come to an agreement as to whether trees bloom exclusively for bee pasture, or whether bees exist solely for the purpose of pollenization of the bloom. When that question is settled there will be greater solidarity among the factors that strive for better beekeeping—the university, the orchardist, and the apiarist.

Chico, Calif.

THE RACES OF BEES

By Phillip J. Baldensperger

The Black Bees of Madagascar and Adjacent Islands, and the Large Brown Bees of Europe

A p i s mellifica, var. *unicolor*, Latreille (1804). This black race of bees, noticed in the beginning of the nineteenth century by the French naturalist, has been isolated just as its orange-colored cousin of Cyprus had been for millenniums by the surrounding sea. It is found not only in Madagascar but on all other neighboring islands, as Mauritius and Reunion to the east, and probably on the northwest islands of Comoro. That bees exist in the small islands of Comoro there is no doubt; but whether they belong to Madagascar as a race or the African mainland has not been ascertained.

The sultan of Comoro Islands, who is pensioned by the French Government, on his visit to France a few years ago was interviewed by a French reporter in Egypt. When toasts are proposed in Europe a cup of champaigne is drunk to the health of country, person, or the like. But Sultan Mohammed, an Arab, of the Oman region in Arabia, and a stout Mohammedan, had his beverage ready, and offered the astonished Frenchman "a drink of Allah's product," simply honey slightly watered. The sultan certainly knew about honey, and honey can be had only where bees are kept.

Latrielle named the Malgache bee unicolor on account of its complete black

color. The bodies of the specimens were scantily covered with brownish fuzz, perhaps rubbed off in course of the journey. A gentleman living in the extreme north of Madagascar, Diego Suarez, reported to me in 1893 that the Sakalaves, who inhabit the lowlands, distinguish two kinds of bees called Tankly, which are kept in the villages, but which give very small returns in wax and honey. Other wild bees live in the forests and mountainous regions of the Howas.

The honey and wax are of a very dark color, but the color, as we know, does not depend on the bees but on the nature of the flowers from which the nectar is gathered. At the colonial exhibitions in France, especially in Marseilles, in 1906 and 1922, honey and wax of Africa were shown. Siamese wax and Tokinese wax were almost black. Tunisian wax was gray, and Malgache wax very brown. The honey exhibited was decidedly green.

The inhabitants of Madagascar are of Asiatic origin. They are said to eat the combs of honey, including honey, wax, and brood. Did they bring over this Indian taste with them when they came from the Malay Islands, or did they know bees before Madagascar was an island, being a part of the Lemurian continent? Some future archaeologist or geologist may decide. I sent over two colonies of Provencal bees in 1893 to improve the native race, but have had no reports as to what became of them.

The West African Bee

Apis mellifica, var. *friesei*, H. v. Buttel-Reepen (1906), named in honor of the distinguished entomologist, Professor D. H. Friese, in Schwerin. H. v. Buttel-Reepen, who received several specimens of dark bees from western Africa, gives it the name of friesei. The latter naturalist says: "This dark bee, found on the western coast of Africa, resembles both the heather bee and the Madagascar bee in size, with the exception of the crescent on the thorax, which is distinctly yellow. The thorax is covered with yellowish-gray fuzz, and the abdominal segments are bordered with brown hair." Very likely this is one of the different hybrids, where the yellow and black races intermingle.

The Brown European Honeybee

Apis mellifera, Linnaeus; *Apis mellifica*, Buttel-Reepen, 1906. The brown European honeybee was first named by the great Swedish naturalist, Linnaeus, *Apis mellifera* in 1758. The Latin name indicates honey-carrier. After several years of further study Linnaeus himself changed the adjective "mellifera" into "mellifica"—that is, honey-maker, as he found the bees really gather nectar from the flowers, and transform the nectar into honey. The German zoologist, H. v. Buttel-Reepen, in 1906, added the second adjective, "mellifica," to distinguish this from the races of *Apis mellifica* named by special second adjectives. Some Germans call this the German bee—a name which has been used in some English countries, too. Some English writers on the subject have called her the English bee. In France it is commonly known as "abeille commune," the common bee. This race, with probably more or less modification according to environment, is found all over central and northwestern Russia, Sweden, Norway, the British Isles, the Netherlands, Germany, Austria, Switzerland, France, Spain, and Portugal.

A slight difference in habits and color caused v. Butte-Reepen to give a new name to the heather bee of northwestern Germany and the Netherlands in 1906. This bee is very likely the ancestor of the brown bee imported into America perhaps even as early as 1638 (or, according to Dr. Phillips, in 1644) by John Eales, who came to teach apiculture.

Where this bee originated is not easy to decide. Bees have followed civilized humanity, as we know they did in America, and have spread about in the regions occupied by human settlements. Thus the North American Indians called the honeybee the white man's fly.

The brown bee is the largest bee of the various races of *Apis mellifica*; and as almost all comb foundation is made to fit the size of their naturally built cells, the cells in which worker bees are reared are about one-fifth of an inch across, and those used for rearing drones are about one-fourth of an inch in diameter. There are about 136 square inches in the surface of a standard Langstroth comb, and this will make the average comb contain approximately 7300 worker-cells on the two surfaces. The European brown bee builds 19 worker-cells on a line of 10 centimeters, while the smallest of the Mediterranean bees builds up to 21 such cells in the same length of comb.

The brown bees are distinguished by the manner in which they prepare their winter stores long before winter sets in, storing the honey closer to the brood. They build the finest combs of honey, so well known as section honey since the invention of section-honey boxes in the latter part of the nineteenth century.

The black bands of the segments of the abdomen are bordered with yellowish fuzz which gives them their brownish appearance. The drones are the biggest of the mellifica kind, and are dark, some-

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times even as black as those of the North African blacks. Drone comb is built by every race according to its swarming propensities. The brown bees living in more northern climates are not inclined to send out as many swarms as the southern races, and therefore they are said not to build drone comb nor the young queens to lay in them the first season. They prepare a very limited number of queen-cells in the swarming season, sometimes not over 20, though occasionally they build more. But they never have been known to build a hundred or more, as is the case with Oriental bees.

Usually a swarm of bees weighing three or four pounds is considered of fair size. Such swarms may contain 15,000 to 20,000 worker bees. As every bee leaving with a swarm carries some honey along to be ready in the new home, the weight of bees filled with honey, just after swarming, and the weight taken two or three days later, may differ greatly. A good-sized colony in full activity may number 50,000 to 60,000 bees, when headed by a good laying year-old queen. Those bees are very apt defenders of their hives, though never as irascible as Orientals. Ably handled, they are easily tamed with a good smoker, provided no useless jerking of hives or frames is going on.

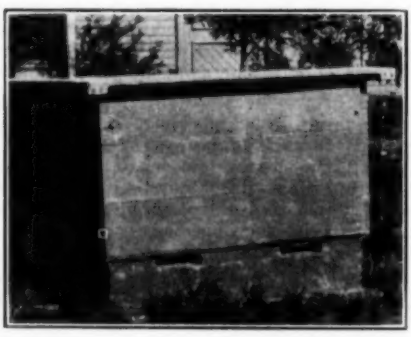
The queen-cells of this race are most elaborate in workmanship; and the bees take special care to lavish wax about them, often designing tiny hexagonal cells all about the surface. Since 1843 a continual influx of Italian and Carniolan blood has come to the leading nations in the bee industry, such as the German and English speaking countries all over the world, so that the brown bee can hardly be found in its pure state except in countries where the Italian race has not found favor. In Switzerland and some parts of Germany beekeepers are trying to build up the old reputation of the brown bee. In southern France it has been kept relatively pure. The high barrier of the Alps and the Appenines forms a natural division against the transalpine and trans-Appenine neighbor of yellow coloring.

In southern France, where extensive apiaries are kept, the "common bee" is very quiet, easily subdued by smoke, and can be well handled without dropping from the combs when inspected; nor does the queen run in every direction when trying to find her. They are good breeders and fine honey-producers. Though the greatest amount of honey produced by a single colony in one season does not exceed 250 pounds (an exceptional case), yet the blame can not be put on the bees, but rather on the honey plants, which, on the southern Alps, consist principally of lavender (*Lavendula vera*) and mountain savory (*Satureja montana*).

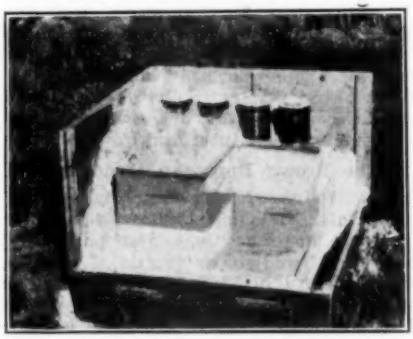
They send out usually only one swarm when not specially controlled, but if kept in very small log hives, two or three swarms may be had in one season.

They are subject to every bee disease provided the germs are in the region. They were known to have had both American and European foul brood, as well as the so-called May diseases of every kind. They will succumb to American foul brood, but easily get over the European foul brood when helped by the beekeeper by depriving them for a short time of a laying queen, and giving them a fair number of young workers.

They do not readily accept yellow queens, but can be made to receive them when all precautions are taken. Crossing with any race of Orientals or other European bees has proved satisfactory, yellow or dark drones being accepted readily by the dark virgins.



Quadruple winter case complete as it appears when packed for winter.



Winter case with side and end removed showing feeder pails in position.

FROM THE FIELD OF EXPERIENCE

FEEDING BEES FOR WINTER

Morley Pettit Gives Brief Directions for Simplifying this Important Work

Making and feeding sugar syrup to bees is a very simple matter if one goes about it in the right way, and it is the very best insurance against certain kinds of winter loss.

You need the best granulated sugar, and should mix it with water in the proportion of two of sugar to one of water, either by weight or bulk, as they weigh and bulk the same. The water should be heated to cause the sugar to dissolve. It can be mixed cold, but takes a great deal more time. The mixing should not be done over a stove. Any honey tank or similar container can be used. Simply pour hot water over the sugar in the right proportion and stir until it is dissolved. Be sure the syrup is cold before it is given to the bees.

The feeder I like best is the ten-pound honey-pail with thirty or forty pinholes punched in the lid. With this I use feeder-boards, which are simply thin covers with two-inch holes bored in them. As a matter of fact, the holes in our boards are more than two inches in diameter, but that would be nearly large enough. A pail of feed is inverted over each hole and each colony is given its full feed at once, be it one, three, or five pails. This is within the winter case, but if not convenient you can use an empty super on each hive. Then fill packing in around the pails. This is important to retain colony heat when nights are cool. Instead of the feeder-board a piece of roofing paper would answer; but there should be something to keep the bees from coming up among the pails. A week later I come to take off the pails and anything the bees have not taken down in that time we consider they do not want. Syrup made and fed in this way does not crystallize in the combs, and you will note that nothing but sugar and water is used.

The best time to feed for winter is just as soon as most of the brood has emerged. It is well recognized that sugar syrup is the very best winter food bees can have. That is why I like my shallow food-chambers. Regardless of what quality of honey they contain, they are first-class for spring use when bees can fly often. Then when the brood-nest is just empty in late fall we fill it up with two or three pails of sugar syrup for winter use, so that by the time the bees eat through to the honey of the food-chamber they are flying frequently in spring and suffer no inconvenience from inferior stores, but are rather stimulated to breed.

Georgetown, Ont. Morley Pettit.

MAKING BEESWAX FROM CAPPINGS

How to Make a Superior Grade of Wax Using Only Simple Apparatus

We do not like the plan of using a capping-melter at extracting time. Nearly all of our extracting-combs have once been brood combs, so that when the cappings are melted there is considerable refuse left. The contact with this and the hot wax certainly does not improve the quality of the honey that goes through the capping-melter. We pride ourselves on the quality of the honey we sell, so we would not consider mixing this product of the capping melter with our main crop, nor would we bother with taking care of two qualities of honey during the rush of the extracting season, especially as our extracting house, 27 miles from home, has no room to spare.

Most of our cappings are put through a press which leaves them in a solid cake, nine inches in diameter and two or three inches thick. Practically all the honey is saved, without any damage whatever to its quality. When these cakes of cappings are finally melted up there are from two to three pounds of wax to each pound of honey. The cakes, although a little sticky, may be readily handled and stored, reducing to a minimum the problem of caring for the cappings until they are to be rendered. Cappings which for any reason have not been pressed are stored in second-hand lard or peanut-butter cans, a tin can about twelve inches in diameter and fourteen high, which may be purchased cheaply at most groceries or bakeries.

For a number of years all of our cappings were melted in the oven of the stove in our honey room at home. Into the top of a can 8½ inches high and about 11½ inches in diameter is set a 12-inch strainer, one of the kind that is made of one piece of tin, with a finely perforated bottom. The strainer is filled with cappings, set into the top of the can and the whole shoved into the oven, the door of which is left open. So used, it is perfectly safe and requires very little watching. It requires only a portion of one's time when doing something else.

With this simple piece of apparatus I

XUM

have melted up hundreds of pounds of cappings. It is a little slow, though, so lately I have used in connection with it another part of my honey outfit. These are cans 14 inches in diameter and 12 high. They should be made of heavy material, with stout handles, and it will pay to have the bottoms, at least, made of copper. You can use two or three of these to good advantage, if you have a good range. A light grating is made of small strips of wood, with cross strips of metal, to fit into the bottom of these. On this is set a can of cappings and the space between the two cans filled with water to near the top. This makes a water-jacketed boiler that may be readily lifted or moved about.

Now set the whole thing on the stove, fire up, and let it boil. While it boils you can go about any other work you have on hand. You can even work safely in some other place most of the time. All you have to look out for is to keep the fire going and see that the water between the two cans does not get too low. The wax can not be heated to the boiling point. As long as there is water in the outside can there is absolutely no danger of the wax burning or boiling over, no matter how hot your fire.

Of course, you might get more wax melted in the same space of time if you set the cans of wax directly on the stove; but this is dangerous without constant watching, and not altogether safe even then. Many a fire has been caused by just a few minutes' neglect, allowing wax to boil over onto the stove.

As the cappings melt, the clear wax may be dipped or poured directly into the wax molds. When you get down to the melted refuse and honey, pour it into the strainer of the oven melter. After a little draining in the oven, the refuse is dumped out and the melted wax and honey below poured into pans until the wax has cooled. These shallow cakes of wax may be put into the double boiler to be remelted. The refuse will still contain considerable wax and it will pay to boil it up in water and put it through a wax press.

The wax made by either of these methods is of the highest quality—much nicer than that usually made by boiling in water. For wax molds, I use mostly the ordinary dishpan, medium size. This makes a cake of wax that fits nicely into the ordinary burlap sack, which is the best thing in which to ship wax. Enameled pans are best, though tin ones may be used. Rub the inside of the mold with a rag wet with very strong soapsuds and let it dry without wiping. This will prevent any sticking.

To make nice cakes of wax, without cracking, the wax should cool very slowly. To insure this, I use a sort of "fireless cooker" arrangement. This is a box about twenty inches square, lined inside on bottom and sides with several thicknesses of the cellular cardboard now so commonly used in making boxes. The pans of wax are stacked in this, with thin boards between and on top. Over them is crowded a cushion about three inches thick, made of an old woolen comforter. Hot wax put into this will stay warm from twelve to twenty-four hours. All sediment has a chance to settle to the bottom, and there is seldom any cracking in cooling.

This method of wax-making may be used for any kind of wax material that does not have too much refuse in it, such as burr-combs and scrapings of hives. It is not recommended for dry brood combs, but if these combs contain much honey that you want to save, such as combs in which the honey has granulated, it may be used. One year I melted over a ton of honey out of such combs, and the biscuit factory I sold it to paid me an extra price because they admitted it was better than most of such honey offered them. With a little care, honey candied in sections, or even cappings, may be melted in the oven melter with very little damage, though that melted in the double boiler, because of its long contact with the hot refuse and wax, is dark-colored and strong flavored. There are some people, however, who like it better than ordinary honey, and I have always been able to sell it at a price only a little lower than white honey. Anyhow, it is all right for vinegar or radiator solution.

J. A. Green.

Grand Junction, Colo.

"CELOTEX" WINTER CASES

Experiment in Packing Hives with Two Thicknesses of Celotex on all Sides

Some years ago I undertook experiments in which my employer had no faith. Fortunately, they were successful, and the good man who had frankly expressed his contempt, exclaimed, "Yes, he blundered through like all Scotchmen." The criticism was unjust, but had it been applied to our experiments with the Celotex winter cases, it would have been fitting. We blundered through to success. We wintered 70 colonies in the new cases and lost one by starvation, 75 per cent being strong, the remainder between medium and weak.

It was a great winter to test the efficiency of this insulating material. Our part of Wisconsin had strong cold winds

and but little snow. The heaviest snow was immediately before the photo was taken, and this picture tells the story. The most severe part of the winter came in December and suddenly followed flying weather; in fact, the most of the packing was finished in a snowstorm. We were fortunate in having frequent flight days in February and March, and April gave us 15 days of warm weather. This statement may create a feeling of envy

In the first and second row the hives are protected by two thicknesses of "celotex." In back row they are in regular winter cases.

in those living in less favored states, but it may console them to know that our bees were wearing themselves out, since there was nothing for them to do. In spite of the wonderful weather, willows and maples bloomed at the usual time and fruit bloom and dandelion were a few days late.

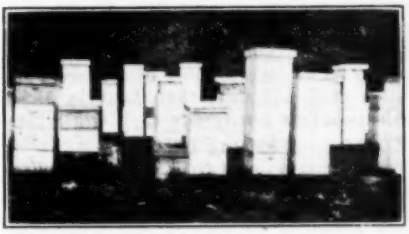
Now what were the blunders to which I referred? The first was evidently insufficient insulation. Professor Hambleton, who has helped us considerably, is authority for this statement. In a report to him I mentioned the fact that I found water lodging in the grooves of both hives and cases. Another blunder was covering the top with tar paper, thereby losing much heat. A wood cover fitting like a metal-roof hive cover and covered with roofing, would have been ideal.

A third blunder, and I think the most important, was the delay in preparing for winter. Had the cases been made in time, packing in early September would have added to the life of the bees, for in using material of this kind the beekeeper is independent of leaves or shavings.

In the same yard I wintered 30 colonies in Bartlett cases and packed them in leaves. They all wintered, and stung without provocation when unpacked, and there was no moisture to be seen when they were unpacked.

I promised friend Crane that I would exactly describe the construction of the case, but I find that difficult. Two hives are placed close together on a stand, with a sheet of Celotex below, one on top, and sheets on sides and ends. Outside are four sheets nailed to frames made of wood, one inch by two inches, fastened with bolts and wing nuts. The outer frames are painted on the outside. This gives two thicknesses of Celotex, as recommended by the manufacturer.

Do I recommend bee-men to adopt it? I don't know. There are many things to be considered. If I were keeping less than 50 colonies and my time was limited, I certainly would use them. But if I made beekeeping my sole business, I would have to use the old-fashioned packing unless I were rich, for the first cost is high. On the other hand, the packing is a rapid operation with these cases, and much time is saved. Then there is no muss, everything can be kept neat and tidy; but a shed or building is



Same apiary, shown at left, in summer.

needed to house the cases in summer. Another great advantage lies in the fact that the cases are close to the ground, standing 24 inches high. I would advise interested folk to make a few cases, giving them a fair trial before investing heavily.

Now I have told you every thing that I know about it, and I want you all to tell me something. Every colony had a shallow super full of early-gathered honey. Was it the insulation or the honey that brought success, or a combination of the two? Joseph M. Barr.

West Allis, Wis.

HONEY AS FLAVORING

Several Recipes in which the Flavor of Honey is Blended Harmoniously with Other Food

Where you would use vanilla or lemon extract, you may use honey. It blends best with the flavor of milk and eggs, in bland desserts where that delightful flavor and aroma of honey will be most appreciated. Vanilla is still best with chocolate, but for many sweets you will like honey.

Fruit Salad

Thoroughly chill cream, whip up a little in a cup, then add the rest and beat

until stiff. Then flavor with honey which has been warmed over hot water to make it liquid, then cooled again, but can still be poured. Add gradually, using two tablespoonfuls to one-half pint whipping cream. Then fold in with a spatula 2 cups diced fruits, including pineapple, bananas, apples, and nut meats. Serve on crisp lettuce or in tall glasses.

Fruit Salad Dressing

If you do not have whipping cream, make a plain lemon pie filling, using honey in place of sugar, fold a stiffly beaten egg into it, and mix with the fruits. The lemon is more healthful, as well as blending better with the fruits, than vinegar.

Banana Pie

Fill a baked pie shell with sliced bananas, and spread with meringue, then brown in a slow oven at 300° fifteen minutes, to thoroughly cook the inside of the egg white without making it watery or tough. For meringue, beat two egg whites stiff and dry, then beat in three tablespoonfuls honey for each egg white.

Floating Island

Make plain custard, allowing three eggs, ½ cup sugar, ½ teaspoon salt, and few grains nutmeg to each quart milk. Cook carefully in double boiler, stirring to prevent lumping and curdling. Beat one egg white stiff, add two tablespoonfuls honey, and press through a pastry tube, making a rosette on each saucerful of custard. Or you may use whipped cream similarly flavored.

Honey Pudding

Plain custard, or plain cornstarch pudding may be flavored with honey Here is a pudding that is creamier and richer-tasting than either. Three level tablespoonfuls cornstarch, three level tablespoonfuls flour, 2 eggs, ¼ cup sugar, 2 cups milk. Mix cornstarch, flour, and sugar, add egg yolks and ¼ cup cold milk. Add remainder of milk hot and stir while it thickens in double boiler, cooking long enough so that cornstarch is well cooked. Remove from fire and beat in ½ cup honey with Dover beater and add ¼ cupful chopped nuts. The egg whites may be used for meringue to brown top of pudding, or may be beaten and folded into it and baked in a pie shell.

Pineapple Sponge

Two tablespoonfuls gelatin, 1 cup cold water, 1½ cups boiling water, ¾ cup honey, ½ cup crushed pineapple. Soak gelatin in cold water five minutes, dissolve in hot water, add honey, and stir till dissolved, then add pineapple. Pour into bowl, and when just beginning to set, beat stiff with egg-beater and pile into molds. Dip into warm water, and run knife around edge of jelly to unmold.

Cake Icing

Put bowl of honey over top of teakettle to melt it. To 2 tablespoonfuls honey add ⅛ teaspoon cinnamon and 2 tablespoonfuls butter, then sift in powdered sugar, creaming with wooden spoon until stiff enough to spread. Let stand an hour to ripen, stir well, and if it seems a bit stiff, add more honey. Spread thickly on cake. Doris W. McCray.

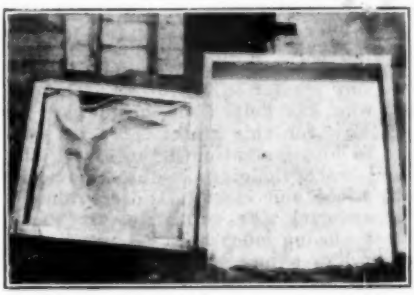
Cedar Rapids, Iowa.

A BOTTOM-BOARD FEEDER

Feeding in Fall or Early Spring Without Disturbing the Winter Packing

As the feeding of bees is almost an inseparbale part of the business, it has always seemed to me that the feeder should also be a part of the hive. During the past twenty years I have tried every style of feeder I have read of. The chief objection to the most of them is the necessity of too much exposure of bees and too much fussing in preparing the colony for feeding. Right here I will say I do not like the 10-pound honey-pail feeder at all. Some day I may tell you why.

The accompanying illustrations show a bottom-board and feeder combined,



The feeder shown at the left fits inside the deep bottom-board shown at the right.

which I started using two years ago. The rim of the bottom-board is 3 inches deep and the feeder is about 2⅝ inches deep. It is made ⅞ inch shorter than the inside length of the hive, so it leaves a ⅞-inch entrance when pushed all the way in. The feeder is made of ⅞-inch pine for the rim and 28-guage galvanized iron for the bottom. The iron is cut ½ inch larger all around than the size of rim. After it is nailed to the rim this ½ inch is bent back and hammered down onto the nail heads. This seems to stiffen the iron and prevents it from leav-

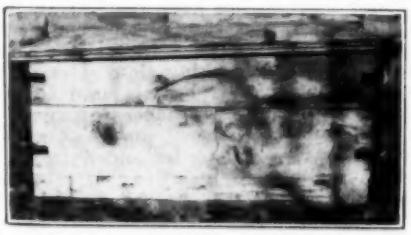
ing gaps between nails. Before nailing the iron on, the edge of the rim is painted with very thick white lead. To prevent the bees from drowning in the syrup I cut pieces of sugar bags a little larger than the inside of the feeder. These are tacked near the top edge and sag so they touch a small surface of the bottom.

During the summer the feeders are turned bottom up on the bottom-boards to prevent comb being built down. I pack my bees as early as possible in quadruple cases. As this is strictly a clover location, with seldom a fall honey flow, all colonies must be fed. Occasionally I feed a colony heavily at packing time. This is

The door of the winter packing case is opened to permit feeding when bees are packed.

a sign of a failing queen and if it is not too late in the season a new queen is introduced. When I start packing all feeders are removed till the packing job is finished.

The part of the case which comes against the ends of each pair of bottom-boards (about 4 inches wide and about 34 inches long) is hinged. This allows me to slip in my feeders when I am ready to feed. This little door has three ⅜-inch holes bored about 6 inches from each end



Door over entrance closed during cold weather when the augur holes serve as entrances.

to provide entrances. When feeding, the feeders are shoved in till the front end just comes flush with the front of the hive. This reduces the entrance to about ¼ inch by the width of the hive. The outer door is then closed and fastened by a small button at each end. My bottom-boards are 4 inches longer than the hive, which provides a good-sized portico. Last season I fed some colonies in December and a good-sized cluster of bees was busy fanning in this portico, but did scarcely any flying. I always stimulate in the spring, and I have never used anything to equal this feeder. No packing is disturbed, and feeding can be started earlier. As all dead bees which have accumulated during the winter will be in the feeder, it is a very easy job to do the spring house-cleaning. If the bees are examined during a mild spell early in the spring and any are found short of stores, this feeder can be used with the least possible disturbance to the colony. This certainly can not be said of the 10-pound pail feeder. After considerable experience in using the pail feeder early in the spring I would risk having the colony starve, as too often these fed colonies later on were found queenless. I think this was due to the disturbance in removing the top packing and placing the pail feeders. It is certainly a great convenience to have a feeder always ready for business whether the colony is packed or unpacked.

Palermo, Ont. Harvey Smith.

A LESSON IN PRONUNCIATION

How Do You Pronounce These Words in Common Use by Beekeepers?

I have debated with myself the advisability of sending in such material as this for publication in a bee journal, for the risks involved are many. The greatest of these is that some may think the implied criticism an uncalled for reflection on those who make up the population of Beedom. Surely it is hoped that no one will think it pedantic. It is only because to the writer there is a sense of the abounding beauty in beekeeping that, when that which is not beautiful becomes manifest, it becomes painfully prominent by contrast.

What beekeeper does not thrill at the sight of a well-kept apiary where every hive is snowy white, the rows are even and the grass well cropped? Who of them is not depressed at the sight of an uncared-for yard, with rotting covers and bottom-boards and grass and weeds well over the tops of the colonies? What beekeeper is not offended at the use of unseemly language in the apiary? It does not belong there; it sounds a note of discord where poetry reigns.

Is it too idealistic to desire correct pronunciation of apicultural terminology? Perhaps. There is, however, a small number of words so frequently used that their very commonness seems to warrant their proper ponounciation.

Nucleus might well head the list. It is with its plural that the most difficulty is experienced, for, whereas it is "one nucleus" and not "nuclea", it is "two nuclei," pronounced nu-cle-eye, with the accent on the first syllable. Beekeeping seems to have chosen the Latin ending, although nucleuses is also correct.

Another word that fares no better is the one which is sometimes called bee glue. This is propolis, which is composed of three syllables—prop-o-lis, the first of which is pronounced just like the word spelled that way which means a support. It is on this first syllable that the accent comes, the second syllable is long and the i in the last one is short.

Pollen, a word of frequent daily use, has a short, and not a long o.

Many seem to have trouble with the words derived from the Latin word which means bee, apis. In apiary, apiarist, apiculture, etc., the "a" constitues the first syllable and is long, just like the article a, and on the first syllable the accent always falls. The second syllable, pi, is pronounced pea. The rest is evident and easy.

The races of bees come in for a large share of mispronunciation. Italian is not Eye-tal-ian, for the first i is short as in it. Carniolan is Car-nee-oh-lan, with the accent on the o, and not Car-nol-i-an.

The packages in which sections of comb honey are inserted are cartons (car-tons), not cartoons.

The editor of Gleanings is Mr. Demuth (Dee-muth), with the accent on the De.

The last word, not at all an apicultural one, but frequently used in reporting experiments in beekeeping, is data—a plural word, the first syllable of which is accented and which is pronounced like the word day.

Old Drone will be after me for this. He thinks I'm high hat anyhow, because my strain of Willsons was not lazy enough to drop an L from the evident origin of their name. But on second thought this rainy summer has made the beekeeping so bad and the trout fishing so good that he is probably gone off to the woods and won't see this until it's too late for his comment.

Ithaca, N. Y. R. B. Willson.

HONEY TARRAGON VINEGAR

How to Make a Superior Honey Vinegar Having a Delicate Spicy Flavor

Tarragon vinegar is an expensive product, most of which is produced in France and England, where it has long been prized as a salad vinegar on account of its delicate, spicy flavor. Most of the European tarragon vinegar is made from malt. A good market for the imported malt vinegar has developed in this country.

The tarragon flavor is obtained from a plant, *Artemisia dracunculus* Linnaeus, commonly called tarragon. It has been fully demonstrated that this plant will thrive in America, and it does especially well in the great valley (Sacramento and San Joaquin) of California. In fact, this or a closely related species is thought to be a native of North America. The plants are perennial, require but little water during the dry season, and the winter temperatures of central California are not severe enough to injure them.

Honey vinegar has long been known among those interested in the various products of the apiary. Very little has been marketed because it has been felt that the public would not pay enough more for honey vinegar than for cider or synthetic vinegar to justify its manufacture, which requires from 18 to 24 months for best results. With honey tarragon vinegar the situation is different. Its excellent aromatic flavor is particularly appealing, for it carries the flavors of honey, vinegar, and tarragon combined in an indescribably pleasing way. A demand for it is sure to arise when it is made available for sale. This gives the beekeeper an opportunity of outlet for waste honeys in the form of a special vinegar at a profit.

Honey vinegar is made by using one and a half pounds of honey to a gallon of soft water. If capping washings and other waste honeys are used, the proper dilution may be found by testing the density of the water-honey mixture with a fresh egg. When the egg floats, exposing a portion the size of a cent, the proper dilution has been reached. A solution with about 15 per cent sugar gives the best results. The process is the same as that used in making slow cider vinegar, except that, if heat is used to dissolve the honey, two ounces of ammonium phosphate and two ounces of potassium tartrate should be added to each thirty gallons to insure a better yeast growth. A federal license is required for extensive manufacture.

A yeast starter is added in the form of a pure culture of fermenting yeasts or by using a small piece of any ordinary yeast after mashing it up in a quart or more of water which feels slightly warm to the hand, or having a temperature of about 100° F. The container (preferably glass, because the resulting product will be of a lighter color) is stored in a warm place (a temperature of 60° F. is best) and the yeast allowed to work in the honey mixture to completion, or

at least for several weeks. No vinegar can be made without an alcoholic fermentation.

After this time, "mother-of-vinegar," which contains the vinegar bacteria, is added. The yeast fermentation process does not require much air, but the vinegar bacteria must have an abundance of oxygen. A container with fine wire netting or cheese-cloth over the openings will admit enough air for vinegar formation. The containers should not be left uncovered, because small flies (*Drosophila*), called vinegar gnats, are sure to be attracted, and they will breed in the forming vinegar if allowed admission.

The tarragon flavor is added to the vinegar by cutting the twigs and leaves of the plant into short pieces and allowing them to remain in the vinegar for several weeks. After this period, the vinegar, which will have absorbed the flavoring oils from the plant, should be drawn off, settled, and bottled for use.

Honey tarragon vinegar should be used sparingly, for it is very penetrating. The tarragon flavor is especially pleasing in raw salads or on cold meats and vegetables. The flavor of fish is improved decidedly by its addition.

Geo. H. Vansell.

BEST MATERIAL FOR PACKING

Comparative Value of Common Packing Materials Used in Winter Cases

In previous issues of Gleanings in Bee Culture there has been some discussion concerning the value of celotex for winter packing. We are, at the present, time, running some experiments at the university bee-yard, in which celotex has been used for the outside walls of the packing case.

In this connection we have secured the co-operation of the Burgess Laboratories here in Madison in runinng a series of tests on the insulating value of a number of materials most commonly used as packing in winter cases. For the benefit of those who may be interested in the results of these tests a preliminary statement is given here. A full discussion of the subject will appear in a bulletin from the Wisconsin Experiment Station, which is now in preparation.

It is interesting to note in this connection that forest leaves, which are ordinarily supposed to be better than planer shavings or wheat straw, stand at the bottom of the list. Wheat straw, which we have ordinarily considered to be of little value here in Wisconsin, has a higher rating than planer shavings, clover chaff, or forest leaves. This material is one of those most easily obtainable by the beekeeper.

H. F. Wilson.

Madison, Wis.

A double-walled hive with food-chamber protected by a double-walled packed rim.

Construction.	Filler	Density of filler lbs. per sq. ft.	Heat transmission B. t. u. per 1°F. temperature difference 1 sq. ft. per 24 hrs.
8-inch beehive section	Balsam-wool	3.25	0.935
¾-inch pine sheeting	Wheat straw	3.0	1.087
1 sheet Jack Frost building paper	Celotex	16.00	1.102
6½ inches of filling	Planer shavings	8.9	1.373
1 sheet Jack Frost building paper	Clover chaff	6.4	1.440
¾-inch pine sheeting	Forest leaves	2.0	1.577
4-inch beehive section	Balsam-wool	3.25	2.1552
¾-inch pine sheeting	Wheat straw	3.0	2.544
1 sheet Jack Frost building paper	Celotex	16.00	2.7000
2½-inch of filling	Planer shavings	8.9	3.048
1 sheet Jack Frost building paper	Clover chaff	6.4	3.173
¾-inch pine sheeting	Forest leaves	2.0	3.420

Conductivity of various kinds of packing material from tests by the Burgess Laboratories, Madison, Wis.

SIFTINGS

by J. E. Crane

Mr. E. Renz, page 600, praises the wrens for their valuable work in ridding the apiary of the wax moth. He is doubtless quite right in this matter, and he might have added that they are among our best songsters. Yes, it pays to encourage them.

* * *

The average beekeeper is certainly up against a hard problem in the "battle of foodstuffs"—up against unlimited wealth and expert salesmen; and it is better to face it squarely than to pat ourselves on the shoulder and say "honey has no competitor."

* * *

Much space in the September number of Gleanings is given to discussions of marketing of honey, and many fine hints are given as to how to dispose of our surplus to the best advantage. That is well worth the careful attention of every extensive producer. If we can add five cents a pound to our comb honey, and a cent or two to our extracted, it will amount to a good deal on our entire crop.

* * *

On page 573 the Editor suggests various methods of increasing sales of honey by getting people to talking about the quality and size of the crop; the quotation of the price of honey in the newspapers with other rural products; a write-up in local papers by the editor, etc. Some one or more of these ways are usually open to every beekeeper. But many of the smaller beekepers seem to prefer to cut the price and so make quick sales, I am sorry to say.

* * *

Samuel Cushman has an excellent article along this line, on page 576, stressing the value of displaying honey. Corrugated-paper cases as usually made are not as good for this purpose as wooden cases with glass sides. However, paper cases can be made having three-inch holes cut out of one side and glass on the inside, if it is found to pay. By the way, I wonder if this is the Samuel Cushman we used to know in Rhode Island forty years ago.

* * *

Mr. Latham says, page 579, "It is the inborn nature of bees to form early a favoritism in queens. They even do this before the virgins emerge, and one or two cells are always selected by the bees upon which to lavish extra care." Therefore the virgins should not be left caged, lest some should be neglected, he argues. Let me say it is also an inborn tendency for bees to feed any of their number that happens to have the misfortune to be caged. They will even feed a laying queen caged, when if you release her they will pounce upon her and kill her at once.

* * *

The rules laid down by our friend Latham for producing good queens will without doubt produce good queens in the hands of an expert; but for those of us who rear queens only for our own use I fear his methods are a little too complicated to prove satisfactory, and I confess I prefer a queen nursery—not one such as he describes, with forty cages in a frame, but cages so large that a Langstroth frame will hold but fifteen, and each supplied with an abundance of food. When such a frame was placed over a queen-excluder on a strong colony we have had but little trouble if the virgins are removed within a reasonable time.

* * *

Why can not beekeepers have expert salesmen? I believe they can. I know of one such. He keeps bees—of course he does; and he can tell grocers all about them. He extracts his surplus and then buys all the comb honey he can sell. When not looking after his own bees he is on the road selling honey, and he sells a lot of it. He goes from town to town and from store to store, taking his honey with him and looking after the honey in stores to see that it is kept in an attractive condition. He is a live wire and does not insist on an eight-hour day. He covers a large territory. What can hinder other enterprising beekeepers from doing the same?

* * *

A new type of honey grader is described on page 605. While this may be desirable as a standard, it seems to me we already have graders sufficiently accurate for all practical purposes. I sometimes think this matter of color is being too highly stressed. The color of honey does not always determine its quality, as we have some very light honey of poor quality and some a little off color of most excellent quality. Since being told by those dealing in honey that they could not readily sell our extracted honey because it was too light-colored, and that they had to buy a darker grade to mix with it in order to satisfy customers, I have felt that we have been over-rating the value of color.

FROM FOREIGN LANDS By W. J. NOLAN

Honey at $1.25 a pound was readily bought by an American, but not in this country, according to the following statement from the Scottish Beekeeper for July, in an article contradicting the notion that heather honey is inferior to any other: "Evidently American millinaires know better, for only last year one famous in the banking world bought all he could get at five shillings and sixpence per pound."

The latest official prices set for this year's crop of extracted honey by the Swiss Association of German-speaking beekeepers are about 39 cents per pound wholesale and 45¾ cents per pound retail. These prices are nearly identical with those of last year at the same time. The cost of living is higher in Switzerland than in neighboring countries, and so, in spite of a duty of 10½ cents per pound, foreign countries continue to send in some honey.

Many journals recently have published articles on how to find the queen easily. In certain European countries where the darker races predominate and are held in higher favor than lighter races, it has long been the custom to paint some mark on the thorax of the queen which aids somewhat in finding her, as well as indicating her age. There is some talk about using the same color during any one year in German-speaking regions. This year in Germany, however, the color is blue, while in Switzerland it is yellow.

Experimentally the honeybee has proven of more value in the pollination of red clover than has the bumblebee, states Doctor Ewert, of Germany, in the July issue of the Markische Bienen-Zeitung. This is ascribed to the fact that the honeybee, being unable to distinguish beforehand blossoms in which it can reach the nectar from those in which it can not, visits all indiscriminately until it obtains a sufficient load of nectar. All of the flowers visited, however, whether they have given up any nectar or not, receive the benefit of the visit by being pollinated.

The excellent queen-breeding work carried on by the Swiss Association of German-speaking beekeepers has long received recognition outside of Switzerland. By careful breeding, certain strains of the brown bee of central Europe have been developed. Herr Justrich, in charge of the breeding work for the association, reports in the Schweizerische Bienen-Zeitung for August that 21 per cent of the association's breeders have been devoting their attention to a single strain for the past 15 years or more, 2 per cent having done this for the past 30 to 34 years. Not far from one-half, or 44 per cent, have been breeding the same strain for at least the past ten years.

To most American beekeepers Nosema apis has presented little of a problem. In certain European countries, on the other hand, it occupies the forefront in the discussion of bee diseases. Recently, in the Bayerische Biene, Doctor Zander, the discoverer of this organism, gave instructions on how to deal with it. In all colonies over 50 per cent infected, he advises sulphuring and burning the bees, melting the combs by steam, and disinfecting all hive parts in a lye solution. Colonies less badly infected are not to be united with healthy colonies, but are to be shaken onto foundation in clean hives. The brood is made up into nuclei if it is to be saved. The old queen is caged in the old hive, and, after all the field bees have returned, if worth saving she is given to one of the nuclei. The old bees, combs, and hive parts are then disposed of as in a badly infected colony. If possible, drinking places for the bees in the vicinity are stopped up, and new places with running water are provided, since standing water is a fruitful source of infection because of feces dropped in it laden with Nosema spores. The ground around the hives is kept spaded up, and all dead bees there are gathered and burned.

The loss of adult bees in Switzerland this spring was too heavy and abnormal to be accounted for by improper wintering conditions. In the Schweizerische Bienen-Zeitung for July, Doctor Morgenthaler states that, although Nosema was found present in all colonies examined, in certain of them marked by special characteristic external symptoms the bees had, in addition, organisms encysted in the Malpighian tubules. These organisms were found in 66 out of 320 cases containing Nosema apis, or in about 20 per cent of the total. The same kind of cysts had been described by Professor Maassen, of Germany, in 1916, but it has remained for Doctor Morgenthaler to recognize their possible significance and importance to the beekeeper. The organism involved has been identified by Professor Prell, of Germany, as a species of Amoeba. The same external symptoms found in bees

containing this organism had already been observed in bees in previous years, and so Doctor Morgenthaler, who has done so much for bee-disease work in Switzerland, came to the conclusion some time ago that they were due to something other than Nosema alone or any other cause until then recognized.

That the honeybee carries pollen from one blossom to another is well-known. That the same insect can carry on its proboscis micro-organisms like yeasts and bacteria from the nectar in one blossom to that in another is not so commonly known. In the Markische Bienen-Zeitung for August appears an interesting resume by Doctor Ewert of work done in this field. Certain yeasts have been found only in the nectar of certain plants visited by the honeybee. Certain bacteria also are present in some kinds of nectar, but thus far none of these yeasts or bacteria has been found harmful to the blossoms. If they possessed the power of fermenting the nectar, they would become of importance to the beekeeper, but even this has never yet been established for them.

Aeroplane dusting in Germany for forest insects recently caused severe losses in apiaries close by, according to the Markische Bienen-Zeitung for August. The colonies affected were examined and found free from any bacterial infection. A chemical analysis, however, showed the presence of arsenic in the dead bees and pollen, but none in the honey. Mostly nurse bees were affected. They crawled out of the hive to die, deserting the brood. That bees of this age suffered so heavily is laid to the fact that any older bees gathering nectar in the vicinity would have taken in too much poison to get back alive to the hive, whereas pollen containing the poison dust could have been carried into the hive with no ill effect on the carrier. The harm came in the consumption of this pollen by the nurse bees.

A list of the ten oldest bee journals still published was given in the Bienen-Vater for July. They, and the dates when founded, are: Rheinische Bienen-Zeitung (Germany), 1850; Preussische Bienen-Zeitung (Germany), 1855; L'Apiculteur (France), 1856; American Bee Journal, 1861; Die Biene (Germany), 1863; Bienenwirtschaftliche Zentralblatt (Germany), 1865; Tiddsskrift for Biavl (Denmark), 1866; Bienen-Vater (Austria), 1869; Cesky Veelar (Czechoslovakia), 1869; and the Pfalzer Bienen-Zeitung (Germany), 1872. Gleanings would come next, having appeared first in January, 1873. The British Bee Journal was begun in May, 1873. It might be added that after its first volume, in 1861, the American Bee Journal ceased publication until 1866 because of the Civil War. Other bee journals had existed before any of the foregoing. For instance, the Bienen-Zeitung of Eichstadt, Germany, established in 1845, was already in its seventeenth year when the American Bee Journal was founded. During at least the fore part of its life the Bienen-Zeitung represents about the very best that apicultural journalism has yet produced, men like Dzierzon, Berlepsch, Donhoff, Hruschka, Leuckart, and others who are commonly quoted today, having been frequent contributors.

Each country has its own apicultural methods, and few beekeepers have had actual experience with the methods of so many lands as has had Mr. Ph. J. Baldensperger, editor of the Bulletin de la Société des Alpes-Maritimes, and long known to readers of Gleanings. In the June issue of his paper, he mentions that the native beekeepers in Morocco make use of pieces of hollow reeds for queen-cages. Slits are cut in them large enough for the workers to feed the queen, while a ripe date serves to stop up the open end. The bees eat their way through the date and liberate the queen in about three or four days. Mr. Baldensperger also comments on the fact that while the darker skinned members of the human race are native in regions near the Equator, with bees the opposite is true, the lighter colored bees being native in those regions.

The status of the Isle of Wight disease in Austria was discussed recently in the Bienen-Vater by Doctor Pointer, who is in charge of the bee-disease investigational work in that country. Although the mite *Acarpis woodi* is still present, it gives no cause for undue alarm. Strong colonies in infected apiaries have remained free from the mite after two years of observation. Swarms from infected colonies, however, have been found infected. That the mite is found mostly on one side or the other of the body is ascribed to its slowness of movement. He has even found it outside the bee's body, and also in colonies affected with Nosema. Doctor Pointer concludes his article with the remark that the disease will be found sooner or later in countries which have put an embargo on the importation of bees as a precaution against the mite. Such has been the case in Germany already. In this connection it is of interest to note the following from the Scottish Beekeeper for July, written by Mr. J. Anderson, of the North of Scotland Agricultural College. He says: "Isle of Wight disease is receding into the background even in Scotland, while in England it is now rarely mentioned at meetings of beekeepers."

FROM NORTH, EAST, WEST AND SOUTH

In Southern California—I was talking recently with a man who had his bees among the orange groves until he secured all of the nectar possible from that source. Then he moved to the sage and deerweed, getting well paid for his trouble. After this flow was well over, he moved on north to the star thistle and is getting good results from that source also.

We are in a country of varying seasons which are governed very materially by the year's rainfall. The past season was one of the most variable on record in this respect. Within a distance of 300 miles the rainfall varied from seven to thirty-five inches on the different bee ranges, and a few hundred miles farther north another ten or fifteen inches can be added. In our own locality, with most beekeepers, the honey prospects ended when the orange bloom was over.

With colonies strong and ready to gather a crop, why should they sit idly by and wait until next year, when by moving a few hundred miles they could gather another crop? Verily, in migratory beekeeping there is a great opportunity for the hustling, robust beekeeper who will devote his time and energy to the business.

On account of the slow market, not too stable prices, and short crop generally, many of the larger producers are talking of some method of co-operative marketing. Many and varied are the means suggested. California offers many different ways, several of which have been tried for years and found satisfactory. The co-operative marketing of the citrus fruits is probably one of the most outstanding examples of successful marketing by the producer. Walnuts, raisins, prunes, and other dried fruits also offer examples. Honey, of course, is different in that its production is almost universal where agriculture is carried on. But much can undoubtedly be accomplished by an understanding among the large producers, especially in regard to the marketing of carload lots to the bottler and jobber. With the smaller quantities, marketing at home and in the near-by country is also a good way to keep our product constantly before the consumer.

I made a short trip to the northeastern part of Los Angeles County recently. Here are grown large amounts of alfalfa hay. I could not hear of any being grown for seed, but a week or ten days of rainy, cool weather held back the cutting and much of it went to full bloom. For a time the bees had a feast and some very satisfactory returns are reported from those who had their bees ready.

There is little else for the bees over most of that country, as the land is all redeemed from the desert. The water is pumped for irrigation and in most cases little attention is given to growing any thing but alfalfa and deciduous fruits. From what I could learn, from one thousand to fifteen hundred colonies were moved into that valley this year. These bees were moved from the orange districts. On their way they passed through one of California's sage and wild buckwheat ranges that is most productive during those years when we have sufficient rainfall. But this year those pastures are dry and parched.

Corona, Calif. L. L. Andrews.

* * *

In Wyoming—The honey flow in Wyoming is just about over now, September 10. It began exceptionally early and is hanging on later than the average. However, during the flow there was considerable cold, cloudy weather which interfered. Regardless of this, our crop will be above average. The per colony average will be well above the 150-pound mark. Chas. H. Ranney, at Lander, has taken off the largest crop in the history of his operations. That will mean seven or eight carloads of extracted water-white honey. The same is true of several other commercial beekeepers in Fremont County. There will be at least twenty-five carloads from that one county alone, which is normal. Far more would have been taken except that several large outfits are out of the business or just about out. Foul brood or business depression or both have sounded the death knell. But as Ben Laws says, we now know what foul brood and debt mean. The beekeepers who come back from failure will make a success in many cases, built upon the experience of failure.

Even though the Wyoming crop is above average this year, the total production will be about normal. As in Fremont County, all over the state the total number of bees has been cut down. However, with this year's good crop there is a spirit of optimism, for the boys will have the where-with-all to scrap American foul brood. With the cash in hand, they say, "Come on, foul brood, we feel like whipping our weights in wildcats." As a consequence several large outfits

will treat their entire extracting equipment by the Wyoming soap-formalin method. One plant is being planned in Lander which will handle about seventy thousand combs.

The foul brood situation in the state as a whole is very much improved. Practically every colony in the honey-producing areas has had a final inspection, with only the clean ones going into the winter, the others having been destroyed. F. S. Harter, in Platte County, says his county is in the best shape it has been since foul brood started. Mr. Harter knows, as he is the pioneer commercial beekeeper in Platte County. He doubts if a single colony will go into the winter foul. He gives no end of praise to John Osborn, their inspector this season.

Honey prices are not very encouraging. Too much has moved for 8½ cents. Most of the beekeepers who have had to move their honey at once are now unloaded, and the rest ought to go for 9 or 9½ cents.

The Wyoming Beekeepers' Association convention is scheduled for January 6 to 9, 1926, at the Washakie Hotel, Thermopolis, Wyoming. This is one of the greatest mineral spring health resorts in the world, and we invite the beekeepers of America to join with us in soaking out the past season's stings—both physical and mental.

Laramie, Wyo. C. L. Corkins.

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In Manitoba—At this date, September 8, there is a decided "tang" of fall in the air. The days are bright and sunny, sometimes hot, as we understand the term, the thermometers registering around 80° in the warmest part of the day, but running down around 40 at night. No frost yet, but pretty near it. Our visitors from the states this summer, Frank C. Pellett and party, and M. C. Berry, think it some joke when we call these days hot, and as we traveled over the country in my Chevrolet coach they kept continually closing the windows. I noticed that they both made the same excuse—they were bothered with catarrh. I guess my complaint was a heavier weight of underwear. The honey crop is good all over the province, with very heavy crops reported from a few especially favored localities. A. Adries, Deloraine, reports a hive on scales gathered 30 pounds in one day; W. D. Wright, Souris, 25 pounds in a day. Some of our larger operators, who very nearly went on the rocks financially last season, are wearing a smile that certainly looks better than their last year's expression. It certainly takes perseverance to succeed with bees. The poor years weed out those who are only looking for easy money.

We have had a good deal of discussion regarding whether or not it pays to winter bees in this country, and I receive quite a few letters for further information even from parties down in the middle states. So far I have kept pretty well out of the discussion, preferring to allow the bekeeepers to settle it; but I have finally decided that where even a few colonies in the apiary are diseased it is better to kill the lot in the fall, extract the honey and sell it, then in the late fall when no bees are flying, just before winter sets in, melt up the wax and boil all the frames for half an hour in an agricultural boiler with enough lye in the water to cut the wax from the frames. This will clean them in good shape and they can then be used again. The honey saved will buy the packages for next year. The wax, when made up, will furnish the foundation, and with a few combs from a healthy apiary to start the packages the expense will be much less than the loss of the crop would have been had the apiary been shaken earlier in the season. When the frames, excluders, and other equipment are boiled in this way, and the hive bodies scorched out, it makes a good job.

If it is thought better to use alcohol-formalin and save the combs, as some of our beekeepers are doing, they are extracting early enough to force the bees to clean all the combs, as we believe they can do it better than the honey can be soaked out of them later. Thus we have several parties working on both systems, and will be pleased to report success or failure next season. However, we feel that the fall is the time to deal with disease, as we have plenty of spare time in which to melt up combs and disinfect in our long winters; and as the risk of wintering is always more of a problem for us than for those further south, this is also worth considering. L. T. Floyd.

Winnipeg, Man.

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In Texas—It is conceded by beekeepers that unless something unlooked-for happens the honey crop of Texais is gathered. The estimated average is 32 pounds per colony. The crop was as follows by localities: Northeast Texas, horsemint, sweet clover, and cotton, 110 per cent; east Texas, yaupon, rattan, linn, and hard-wood bushes, 100 per cent; north central Texas, sweet clover and cotton, 50 per cent; central south and southwest Texas, mesquite, 30 per cent; west central and the Cap Rock country, mesquite, catsclaw, and horsemint, 150 per cent; Trans-Pecos Texas, 30

per cent. The greater portion of the honey is now out of the hands of the producers. The average price received was ten cents. The most of the crop was sold on the home market. The bulk of the honey was sold as mesquite, as the flavor of that plant predominated. The honey was somewhat thicker and a little darker than samples of mesquite honey saved from past years.

The ownership of bees in Texas is fast dividing itself between those who keep bees for pleasure and the commercial bee-men. The small beekeepers, who kept a few colonies for the little that could be made from them, are fast going. In fact, the drought of this summer has cleaned out many of this class. Many more, fearing the prospect for next year, have sold. The commercial men are buying every colony offered for sale. This move spells the salvation of beekeeping. The bee-fancier, not caring for financial gain from his bees, will continue investigational work; and the commercial men, applying business methods and up-to-date ways, will succeed.

Circular No. 35, "Suggestions on Queen-Rearing," from the Texas Agricultural Experiment Station, while issued for distribution within the state, will be sent to those who are interested in this subject. There is no charge for the publication. Address all requests to the Director, Texas Agricultural Experiment Station, College Station, Texas. Bulletin No. 255 has been reprinted and may be had from the same place.

One of the hardest things for beekeepers to learn is that the beekeeping year begins the middle of August, and if the beginning is not made correctly the whole year will be adverse. This time is not an abitrary one set by beekeepers or writers on beekeeping, but is a date set by nature herself. A very careful compilation of data on weather conditions, honey flows, and bee activities has proven that the statements of the older beekeepers relative to this fact are correct. The rainfall and ground moisture govern the growth of plants, and these, the food supply of the bees, govern the date of fall brood-rearing. The moral of all this is, fix your brood-nests now and watch your stores.

The Dallas State Fair is billed for October, and the second day of the fair has been named as Beekeepers' Day. Superintendent of Apicultural Exhibits, W. O. Victor, wants every beekeeper to send exhibits. Good prizes are offered. Any beekeeper is welcome to exhibit. Write Supt W. O. Victor, Uvalde, or the Dallas Fair Association, Dallas, Texas, for catalogs. H. B. Parks.

San Antonio, Texas.

In Louisiana—Conditions have been very bad for bees and the beekeeper so far this year in Louisiana. The continued drouth of spring set the honey plants back to where they could never catch up, and so they stood stunted but holding on, as it were, for better times. Late in the summer an occasional rain came, but too late to do much good. The result is one of the shortest honey crops in Louisiana for the past ten years. Quite a quantity of honey was made by the bees in the twenty hives used here on the experimental farms of the university, during the month of June. It was, however, of an inferior grade and a dark color; but since that time no nectar has been brought in, and the surplus has been gradually consumed by the bees. Of course, this condition did not prevail in every section of the state. Some districts were fortunate enough to have the usual honey flow and reaped quite a harvest. The result has been, taking every section and striking an average, that we find the crop to be about one-half of normal, or less.

One of our big producers of honey in south-central Louisiana, whose crop output last season was 296 barrels, this season reached only half that amount and says that he does not expect to take any more honey this year. Another honey-producer in the northwestern part of the state, whose crop for the past three years has brought him close to ten thousand dollars each year, writes me that his crop has been almost an entire failure this year.

We still have hopes of a fall crop from goldenrod, heartsease, and thoroughwort; and as the bees are in fine condition and the colonies strong, September and October may yet bring a fine honey flow. I have seen colonies in large apaiaries produce as much as one hundred and fifty pounds on an average during these months alone.

The fair season will start here on October 4 with a district fair at Donaldsonville. Following this fair two other district fairs will be held, one at Lafayette and the other at Alexandria, then the season will close with the State Fair at Shreveport about November 10. Each of these fairs is offering substantial premiums to beekeepers in every department of the trade, and if the producers have not been handicapped too greatly by the drouth I expect a large number of exhibitors. Last season more than a hundred beekeepers were represented with their wares in competition at the State Fair alone.

Baton Rouge, La. E. C. Davis.

In Michigan—The season of 1925 could well be summed up in the expression, "A weak start but a strong finish." Most of the white honey collected was brought in after July first, and since that date many beekeepers have been having nearly a steady honey flow. In the northern part of the state, good yields from milkweed are reported. In some sections basswood was especially good. In the district around the college here goldenrod has been giving the best yield we have had since 1920. In fact, the scale hive, which is just an average colony, has gained sixty-six pounds in the last eighteen days, mostly from goldenrod. This late honey flow has facilitated late summer re-queening and has stimulated brood-rearing, in some cases even causing swarming in late August, so that the bees should go into winter quarters in splendid condition, except in those districts where the whole season has been nearly a failure.

The local honey market apparently hasn't settled down yet, largely because there are frequent offerings of ungraded stuff.

Each year a larger number of county beekeepers' associations make extensive exhibits at local fairs. A splendid exhibit was put on by the Ionia County Association, with a live bee demonstration and several lecturers. Also many exhibits are already in evidence in store and bank windows in the leading cities. The constant group of observers is mute testimony to the value of these advertisements.

This territory has recently been the object of a heavy advertising campaign by the manufacturer of Honey Scotch candy. We feel that the fact that the word "honey" appears in the windows of many stores in large letters makes good indirect advertising for beekeepers.

The northern part of the state has been severely affected by forest fires, both in the upper peninsula and the northern part of the lower. No reports of the destruction of apiaries have been received, although in one town in the upper peninsula, where there is a large commercial apiary, the newspaper reported that apples were baked on the trees by the intense heat. In spite of the tremendous loss in timber, these burned-over areas will, for the next few years, furnish tons of fireweed honey. The prospect for next year's clover honey crop would be greatly improved with heavy rains.

Interest in beekeeping continues its rapid growth in the agricultural high schools of the state—in a large number the agricultural teacher has already established projects in beekeeping, and projects will be started in many more next year. Those agricultural teachers who had not already had instruction in beekeeping took a two weeks' course in beekeeping here at the college during the summer session. Mr. Edwin Ewell, Extension Specialist in beekeeping, has been spending some time lecturing to these high school classes of agricultural students with very satisfactory results.

Judging from the reports received, there has been an unusual amount of thievery and molestation of bee-yards this summer. Every beekeeper so troubled should make every effort to catch the thief and should then let it be known that it is not the loss of the honey that is costly so much as the danger of spreading disease during the orgy of robbing that invariably follows the molestation of a colony.

During the seventh annual summer meeting program at East Jordan a prominent beekeeper stated that the present trend in beekeeping is toward the mass production of honey, as is already exemplified by the automobile industry; and now comes a letter from a former student, an ex-service man, who was in training here at the college in 1920, and who is now operating a large outfit in Montana. He has five carloads of honey ready for shipment. R. H. Kelty.

East Lansing, Mich.

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In Wisconsin—The weather is still warm and hot (Sept. 7) a part of the time and this is ideal for thick, ripe honey. It also is ideal for working bees and extracting honey. We have not had a single case of robbing or bees trying to rob, so far this season. Bees have had a chance to make a living at least, due to the favorable weather and enough blossoms for them to work on. Sweet clover pastures have helped out. This is the first season in many years that we have not had robber bees to contend with weeks before this.

Mr. Byer in the September issue told how he was being rushed to get off the white honey before the buckwheat honey came in. We are fortunate in that so little buckwheat is raised here that no surplus honey is stored from it, but we have a condition and a problem that are quite similar. The dandelion honey flow was very good this year and all food-chambers are filled and sealed with dandelion honey. We purposely did not add more supers at the time because we did not want this yellow strong-flavored honey in the supers with the clover honey. All colonies had twenty-frame brood-chambers and one ten-frame L food-chamber, but the hives became crowded

with honey and there was only a few days' gap between the dandelion and clover honey flows. The dandelion honey could not be extracted, and more supers had to be added. The result was that the bees moved the dandelion honey from below up into the supers.

A mixture of this honey with clover is very fine in flavor and of a slight lemon color; but the difficulty is in watching all combs and supers while uncapping, and loading the extractor completely with either the all-clover honey, mixed clover and dandelion, or all dandelion. It is not practical to use a honey pump under these conditions. The extractor must be drained after each load is extracted, and the honey placed in separate tanks. If this is not carefully done it is no wonder at all that buyers accuse beekeepers of not sending honey like the sample. Edward Hassinger, Jr.

Greenville, Wis.

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In Western New York The hot dry weather of early June literally burned up the alsike clover over a greater part of western New York, with the result that only a few favored localities produced any white honey at all. Since the middle of June we have been favored with copious showers, bringing bounteous blessings to both beekeepers and farmers. The old clover fields, that had been burned by the drouth and had hardly given the farmers hay enough to pay for cutting, put on new life and sent out a luxuriant second growth that yielded both nectar and hay. The honey, coming so late, is of course mixed with buckwheat and other fall flowers, which have all yielded abundantly.

Wild carrot is a prevalent weed here, the meadows and roadsides being white with it in late summer. Some seasons it yields a little nectar of a very poor quality, being muddy in color and not very agreeable in taste, reminding one somewhat of honeydew. But fortunately it is not detectable when it is mixed with buckwheat and fall flowers. For years bees never seemed to notice the plant at all, but for the past few years they have worked it more or less each fall.

There is very little new seeding of clover here this year, as most of the young plants died during the dry weather. However, prospects don't mean much anyway, as some of the worst failures come after good prospects and some good crops after poor prospects.

The honey market here at present is a little dull, prices being about the same as last year.

Hubam clover is doing well with us again this year. We have one piece, sown on June 18, that is beginning to bloom, being about 18 inches high, while that sown early is nearly 6 feet tall and bees are working it nearly every day.

Ransomville, N. Y. H. M. Myers.

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In Porto Rico To date the honey crop of Porto Rico has been a disappointment. In the spring things looked very promising, beekeepers were optimistic, and weather conditions were good. However, the trees have not blossomed as well as the rainfall seemed to indicate they should. In my locality there has not been even one fair flush of bloom this year from the Guama trees, which are one of the principle sources of heavy yields here. I have seen five good flushes of bloom in one year from these trees.

At present writing (the last week in August) we are having a fair honey flow from the Guava trees. Probably more honey is gathered from these trees than any other variety on the island, as they have some bloom the year round, not always yielding, however. It is still possible to secure a fair yield in the hill sections. At present it is unusually dry and hot for this time of the year. I trust this is not the forerunner of the dreaded West Indian tornado.

If the plans which are on foot here materialize there will be a determined effort made by some of the up-to-date apiarists to enter the field of selling bees to the northern beekeepers in competition with the breeders in the southern states. In my twelve years' experience here it has occurred to me many times that Porto Rico is admirably situated to supply bees to the northern beekeepers. There is no frost here and colonies are in condition to draw on for nuclei or full colonies any month of the year. In the northern coastal plain the main honey flows are usually in January, February, and March, which puts the bees in good condition for shipping, as there is a plentiful supply of young bees.

One of the main factors which has hindered the export of bees to the mainland has been the slow steamship service. Fortunately this is being remedied by the steamship companies, and not only faster oil-burning steamers are being put into service, but they also have cold-storage compartments for the shipment of fruits. So, if need be, the bees could be shipped in the hottest kind of weather and the shipper would be assured they would reach the mainland safely. These innovations will be of great benefit to the beekeepers here as it will be possible to have two strings to our bows—the sale of bees and honey.

XUM

This should put the business on a more profitable basis.

Aibonito, Porto Rico. P. G. Snyder.

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In Ontario—When my last notes for this column were written, about August 9, prospects were good for a crop of honey from buckwheat here in Ontario that would surpass all past yields. All colonies were very strong, as there had been almost no swarming, and buckwheat was abundant and the ground soaked with moisture. For about six days after that date results seemed to justify our predictions, as honey came in very rapidly and it kept us jumping to get supers cleared of the clover honey and have them given back to colonies for buckwheat storage. But extreme heat and drouth cut the crop short when buckwheat was not half over, so far as bloom was concerned, and not a pound of surplus was stored in our locality after about Aug. 18. While a fair crop of buckwheat was stored during the few days of a heavy flow, the brood-nests are quite light as great quantities of brood in all stages were present when the flow stopped, and much honey was used to carry this brood to maturity. We have just got nicely started to take off the buckwheat honey at this date (Sept. 9) and expect to be busy at the job for the next two weeks. We again find it advisable to go to the yards early in the morning and load up honey before bees are stirred up. During warm sunny days they certainly kick up a racket if any honey is exposed, and in a few minutes a whole yard can be badly demoralized by a bit of carelessness. In using escapes, as we are now doing, we find a great difference in colonies even with the same kind of escapes used. Some colonies seem to get uneasy as soon as escape-boards are placed between supers and brood-nests, and in a few hours all bees will be out of supers. Others seem to be quite contented no matter where they are, and after 48 hours we have found supers with lots of bees in them, escapes in perfect order, and no brood or anything else that we could see in the supers to hold them there. We use several kinds of escapes and find the same thing happening with all of them.

As already stated, we prefer to go to yards at this time of year when no honey is coming in, either early in the morning or quite late in the evening; but we are always on the lookout for a cool cloudy day and like to have supers above escapes ready when such a day comes. Today we rushed home three loads of 57 supers each during such weather, and we were actually disappointed when weather turned warm again this evening. A few weeks ago we were always looking and hoping for warm, balmy weather, and now we are glad to see the opposite brand of weather—all of which goes to show what unreasonable creatures we are.

On Aug. 14 buckwheat, late sweet clover in pasture fields, and second crop of alfalfa, were all yielding honey—in fact, there was what we would call a "heavy flow" on that date. That same day I noticed bees by the hundreds in a field of second-crop ordinary red clover. They must have been getting honey or they would not have been there when nectar was abundant from other sources. And yet this field of red clover was very rank, as we had had heavy rains for a week or more before, and all vegetation was luxuriant. So in this case it could not have been short tubes enabling bees to reach the nectar, but more likely such a profuse flow of nectar that it fairly oozed up so that the bees could reach it. After the great heat and drouth already mentioned, no bees were seen on red clover.

Later reports would seem to indicate that the white honey crop for Ontario is heavier than we thought was the case a few weeks ago. While the crop will not be as large as in 1923, it is, I should judge, much heavier than that of 1922. Quality, as a rule, is good; and from what I can learn, movement of the crop is normal at a slightly lower price than prevailed a year ago. The apple crop is abundant in Ontario this year and some think this crop affects sales of honey more or less. Vegetable crops of all kinds are very plentiful, and prices in many cases are ruinously low for the producer. So, all things considered, the beekeeper is faring at least as well as producers of other lines of farm produce. As is always noticeable in a year of fair honey yields, many small producers put their honey on the market—are peddling it in a number of cases that have come to my notice—at prices much below what they might get just as easily if they asked it. Of course, this demoralizes the honey market for the time being. Personally we do very little retailing, as we do not get the time to give it the attention required; yet continued price-cutting by the retailer sooner or later (generally sooner) affects the wholesaler. When all is said and done as to co-operative marketing in all its various phases, the old law of supply and demand is still a powerful factor in determining sales of any product that goes on the market.

All clovers in our section are looking well for next year here, so we are again looking toward another reaping time even when the present season's crop is not all harvested yet. J. L. Byer.

Markham, Ont.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Strain of Bees Immune to American Foul Brood During the past summer I have been working with several colonies of bees which are apparently immune to American foul brood. The conditions under which this was discovered and also subsequent experiments lead me to believe that this immunity is inheritable. I am now carrying on further experiments to ascertain whether this is so and whether breeding from these resistant colonies may not result in producing a strain of bees which are immune to the ravages of American foul brood.

Bruce Lineburg, Ph.D.,
Professor of Biology,
Lake Forest, Ill. Lake Forest College.

A New Honey-Grader The accompanying illustration, together with the description published on page 605 of the September issue of this journal, will make clear the principle of the new honey-grader recently brought out by the Bee Culture Laboratory at

The new government honey-grader.

Washington in co-operation with the Bureau of Agricultural Economics. The sliding member projecting at the right carries a wedge-shaped vessel for the honey to be tested over the upper slot and a wedge of amber glass, with its point in the opposite direction, over the slot just below. By turning the small wheel on the front of the instrument, and looking through the narrow opening just below the middle of the scale until a point is found where the color of the honey and that of the glass match, the pointer at the top of the scale indicates the grade. The grades on the scale are water-white, extra white, white, extra-light amber, light amber, amber, and dark.

Geo. S. Demuth.

Non-Crystallizing Sugar Syrup The following formula, using tartaric acid in making the invert sugar syrup, has been worked out by the Carbohydrate Laboratory of the Bureau of Chemistry of the Department of Agriculture, and is recommended as being much more satisfactory than attempting to invert the sugar syrup to the necessary point without adding a sufficient amount of the non-inverted syrup to make the composition non-crystallizing.

Prepare a solution according to the following mixture, a good grade of granulated sugar being used in all cases: 50 pounds sugar, 25 pounds (3 gallons) water, 1 ounce tartaric acid crystals. Boil gently for one-half hour in a loosely covered kettle. At the end of this time test the density of the syrup, using either a Baume hydrometer or a thermometer. The density should be very nearly 37° Baume (measured at the boiling temperature), or, if a thermometer is used, the syrup should boil at about 228° Fahrenheit. The density, however, may be slightly lower or higher than this, depending on the amount of water that has evaporated during the boiling. If the syrup tests lower than 37° Baume or 228° Fahrenheit, continue the boiling until this density is reached; if it tests somewhat higher, add carefully a small amount of water, keeping the syrup gently boiling until the required density is reached. The time required accurately to adjust the density in this way is only about two or three minutes. By using the proportions of sugar and water given in the above formula, and boiling for one-half hour, a syrup is obtained which is very nearly completely inverted.

Make up a second batch of syrup without inversion, as follows: 50 pounds sugar, 14½ pounds (7 quarts) water. Heat slowly to boiling in a covered kettle until the sugar is completely dissolved. Do not heat any longer than is necessary to dissolve the sugar.

Mix the two batches thoroughly in the proportions of 3 to 2—3 gallons of the invert syrup with 2 gallons of the uninverted syrup. It is best to make the invert syrup first, and let cool until the batch of uninverted syrup is prepared. In this way, the temperature of the resulting mixture is reduced somewhat, so that the small amount of acid present produces practically no further inversion. The composition of the resulting mixed syrup we have found to be such that it will keep for an almost unlimited length of time, even in cold weather, without crystallizing.

Washington, D. C. E. L. Sechrist.

Apiary on Garage Roof My garage apiary consists of two colonies of light-colored Italian bees located almost in the heart of the city of Boston, seven miles from the State House dome, in Roslindale. Its shows what can be done with city beekeeping. Last year with one colony I extracted 65 pounds of

Bees on garage roof in the city of Boston.

surplus honey, besides leaving the bees plenty for winter. This year it looks as though I would get 150 pounds from the two colonies. The latter part of last May a neighbor telephoned that there were a lot of honeybees on her hedge, so with an empty hive, smoker, etc., I soon had them in the garage apiary. The 50 x 100-foot lot on which we live is too small for beekeeping, so I had the garage built with a flat roof especially for the apiary.

Boston, Mass. Fred H. White, Jr.

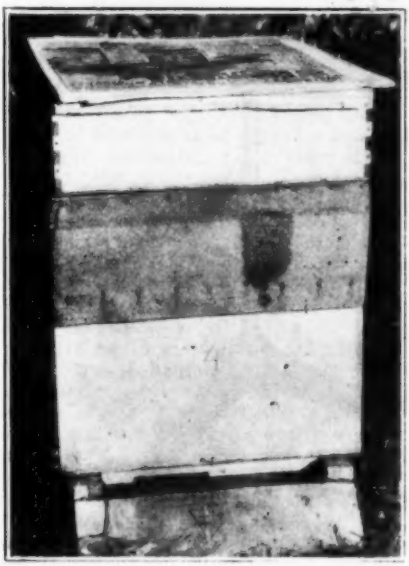
Selling to Merchants in 60-pound Cans Selling honey to the retailer in 60-pound tins hasn't proven satisfactory with us, although we have many calls for 60-pound tins of honey from merchants who have a lot of fruit jars on hand at the end of the season which they wish to dispose of in this way. This seems to work well as long as the honey does not granulate. But if it granulates, it makes a messy job for the merchants, and they are not inclined to push honey. A merchant doesn't like to buy more honey as long as he has some on hand. Those who buy in 60-pound tins generally have honey on hand. The 60-pound tin proposition has proven a detriment with us.

Eureka, Kans. L. Churchman.

Selling honey at a roadside stand in California. The piano box makes an inexpensive shelter.

Crepe Hanger Needed The thought always recurs to me in reading the bee magazines, that they have lost their equilibrium—they are decidedly lopsided. Now, if I were editing a bee paper I would, by hook or crook, get a few good crepe-hangers or gloom-spreaders to write an article now and then to give them poise, so as not to over-stimulate the beginner. This would have much the same result as a "Go-Slow-Dangerous-Curve-Ahead" sign has on the speeding motorist on the mountain highway. He may be getting the thrill of his life, but he takes his foot off the gas at the thought of a leap of some hundreds of feet to the river or canyon below. Caution is as essential to success as is pep. J. N. Clark.

St. Maries, Idaho.



Rim made of tarred paper tacked to a framework for packing the food-chamber on a double-walled hive as used by Geo. J. Griesenauer, Chicago, Ill. The chaff tray is shown in place on top ready for the cover which telescopes over the paper rim.

(1)Apiary of Ildefonzo Nuño, Colima, Mexico, where it is not necessary to pack the bees for winter. In the tropics, instead of the wintering problem there are the problems of preventing robbing, dwindling, and starvation during periods of dearth of nectar.

(2) A group of four hives ready to have the winter case set over them. The colonies in the the background are in double-walled hives having the winter packing built in so that when the supers are taken off and the chaff tray dropped down in place the bees are packed for winter.

(3) Lifting a four-colony winter case over the hives preparatory to pouring in the packing material.

TALKS TO BEGINNERS

Geo. S. Demuth

October brings us to the final chapter in the care of the bees for the season in most localities. Throughout the north the colonies should now be prepared for winter so that they will need no further attention until spring. Except in the case of cellar wintering, this should all be done early in the month while the weather is fine.

Those who have followed the directions given in these talks through August and September, especially in regard to having each colony supplied with a good queen and plenty of stores, together with sufficient room for the rearing of brood, have already accomplished the most important part of the preparation of their colonies for winter. Those who have in addition to this supplied each colony with a food-chamber filled with early-gathered honey have their colonies ready for the ordeal of winter, except providing winter protection. If a double-walled hive is used the winter protection is already supplied when the supers are taken off and the chaff tray put in place, so that all that is necessary in preparing the bees for winter is to reduce the entrance by putting in the entrance block.

Those who did not begin back in August to prepare their colonies for winter can not wholly retrieve the situation now, but must make the best of what they have. Colonies that had old or worn-out queens during August and September, colonies that were compelled to skimp through on meager stores, and colonies that were too weak in August to build up to sufficient strength for winter can not now be put into good condition for wintering, although some things can be done to retrieve the situation somewhat.

Size of Cluster in October

The first essential for good wintering is that of strong colonies—that is, strong for the season. It is natural for the number of bees in each colony to be greatly reduced in the fall compared with the number during the summer. The size of the winter colony varies according to the season, depending upon how rapidly the old bees have died off and the amount of brood that is reared in August and September. Some seasons the colonies are of moderate size but made up largely of young bees, while other seasons the colonies are much larger but have a large number of old bees that go into the winter. In either case the results in wintering are about the same, since the old bees die off during the winter.

A good colony at this season will occupy at least five or six of the spaces between the combs on a frostly morning in October if in a single-walled hive. If in a double-walled hive the cluster should extend nearly or quite across the hive and touch the sides. Colonies that occupy only three or four spaces between the combs under like conditions are too weak for best results in wintering in the north. Any such colonies should be united, two or three of them being put together to make one good colony.

This can still be done by the newspaper plan, described last month, provided the weather is warm enough for the bees to be active. If the weather is cold enough to cause the bees to cluster, the uniting can best be done by taking out the unoccupied combs from two hives, then lifting without separating the three or four frames on which the bees are clustered, and placing them in the other hives so that the two clusters will touch each other. As a rule, bees unite peaceably when the weather is cold enough to cause them to form a cluster. If in

Small colonies can often be successfully wintered without uniting by reducing the size of the hive to fit the cluster. This is done by taking out the unoccupied combs and filling the space with chaff division-boards, or by making light-fitting division-boards and fastening them in place, then pouring in packing material in the vacant space. When this is done care should be taken to prevent moisture from working into the packing through the entrance.

Amount of Honey Needed for Winter

The second essential for good wintering is a supply of good food sufficient to last the colony through the winter and early spring. Each colony should have not less than 25 or 30 pounds of honey, or its equivalent in sugar syrup, but a larger amount is better. Those who provided each colony with a shallow extracting super to be used as a food-chamber in time to have it entirely filled with early-gathered honey need not give the matter of food further thought unless the honey is not of good quality for winter stores. Those who have not thus provided their colonies with a food-chamber filled with honey should find out approximately how much honey is in the hive at this time. This can be done by weighing the hive as it stands, then deducting the weight of the hive, combs, and bees, allowing a little extra for pollen. The weighing can be done with sufficient accuracy by hooking spring scales first under one end, then under the other, and

adding the two scale readings.

A standard ten-frame hive made of white pine, having a metal cover, together with an inner cover but with empty combs, weighs about 34 pounds. To this should be added about five pounds for the bees and a little pollen in the combs, making a total of 39 to 40 pounds to be deducted. By weighing an empty hive without frames, then adding one pound for each comb, one can determine approximately the weight of whatever hive is used. The ten-frame standard hive with metal cover and inner cover, when properly provisioned, should, therefore, weigh not less than 65 or 70 pounds. An eight-frame hive similarly equipped and provisioned should weigh not less than 60 to 65 pounds, and the Buckeye hive without the chaff tray or cover should weigh 80 to 85 pounds. Any colonies whose hives weigh less should be fed a sufficient amount to bring the weight up to these figures.

Making Syrup for Fall Feeding

For making syrup to supply the bees with winter stores, about two parts of granulated sugar should be used to one part of water, thus making a heavy syrup. This is as good if not better than any other kind of food for the bees, especially in the north where they are confined to their hives for long periods without cleansing flights. Beginners often try to economize by feeding honey that has been scorched from melting cappings or honey that has begun to ferment. This should never be done in the north since it would be almost sure to result in the death of the colony.

It is necessary to use nearly as many pounds of dry sugar as the colony is lacking in its full supply of stores, not counting the water used in making the syrup. For instance, if a colony lacks ten pounds of having enough honey it will need about ten pounds of sugar. In making the syrup, this is dissolved in about five pounds of water, thus making 15 pounds of syrup, but since there is some loss in feeding it is necessary to feed nearly 15 pounds of this syrup to have ten pounds stored.

To make this amount of syrup put five pounds of water into a vessel and heat it to the boiling point, then pour in ten pounds of sugar and stir until the crystals are completely dissolved. It is well to add a few ounces of water to make up for evaporation so that the syrup will not crystallize after being stored in the combs, or dissolve about a half teaspoonful of tartaric acid in a little water and add this to the syrup, or put it into the water before the sugar is added. The tartaric acid will reduce the tendency of the syrup to crystallize, but in order for the acid to act upon the sugar it is necessary to continue applying heat until the syrup reaches the boiling point. For directions for making the syrup, as well as for feeding it to the bees, the beginner should read the article by Morley Pettit on page 653 of this issue.

In many localities it is seldom if ever necessary to feed sugar syrup for winter stores if the management has been right during the season; but in the northern tier of states and in Canada, where the bees are often confined to their hives for long periods during the winter, as well as in all cases of cellar wintering, where the bees must remain in their hives for several months, it is good practice to feed each colony from 10 to 15 pounds of sugar syrup, regardless of the amount of honey already in the hive. When this is done in October after most of the brood has emerged, the syrup is stored below the honey, where it will be used first during the winter, thus supplying food that is completely digestible during confinement, and leaving the honey stores which may contain indigestible matter until spring, when the bees will have cleansing flights.

Winter Protection

The third requirement for successful wintering is that of protection. It is to be hoped that every beginner who reads these lines will provide winter protection adequate for his location, whether north or south. This can be done either by double-walled hives in which the protection is built in the hive, or by means of a winter packing case in which a single-walled hive is placed in a box of sufficient size to allow several inches of packing material, such as planer shavings, dry sawdust, wheat chaff, finely cut straw, or well-broken forest leaves, on top, sides, and bottom to retain the heat of the hive. The entrance must be left open, but it can be reduced to a small opening, usually about three-eighths inch by one and one-half or two inches; but the tunnel connecting the hive entrance to the outer case should be of generous size, at least an inch deep and eight inches wide. The box or winter packing case should be covered with a tight roof so that the packing material can not become wet.

If it is not convenient to use double-walled hives or pack the single-walled hives in permanent packing cases, the colonies can be protected at very little cost for material by using building paper to hold the packing material in place. To pack colonies in this way, make a rim of 1"x2" material to go around the bottom of the hive to hold the paper far enough away to allow for packing at the sides. The front of this frame can rest on the

(Continued on page 685.)

GLEANED BY ASKING

Geo. S. Demuth

Wintering in Cellar or Outside

Question.—Will the bees do better if wintered in double-walled hives out of doors or in single-walled hives in the cellar? When wintered outside do they do better in double-walled hives or in single-walled hives in packing cases? Edgar W. Stewart.
Missouri.

Answer.—In your locality wintering outside in double-walled hives should give better results, as a rule. For successful cellar-wintering the food which the bees consume during their confinement in the cellar must be of the very best quality. This means that it must not contain material which the bees are not able to digest, since this would cause an accumulation of feces which acts as an irritant to the bees and causes them to wear themselves out by excessive activity. In your locality the natural stores would not be safe for cellar wintering year after year on account of containing too much gum or indigestible material. If you should care to go to the trouble of feeding each colony from 10 to 20 pounds of sugar syrup after most of the brood has emerged so that the bees would store the syrup where it would be used during the winter instead of the honey, you could winter successfully in a good cellar even as far south as Missouri.. However, in your locality you will no doubt be more successful year after year by wintering in double-walled hives outside. There should be no difference in the way the bees winter in double-walled hives or in single-walled hives packed in winter cases, provided the amount of protection in each case is equal.

Changing Location of Bees for Winter

Question.—Can bees be moved from their summer stands to another location about 100 feet away for wintering outdoors, then be placed back on their old stands after warm weather comes in the spring?
Wisconsin. Arthur D. Hannon.

Answer.—It would not be advisable to move the bees to another location to pack them for winter, since this would result in much confusion and loss of bees during the first winter flight, as well as during the first flight after moving them back in the spring. Hives can be moved a few feet to put them into winter cases without causing much confusion, but it is better to change the external appearance of things as little as possible when the bees are packed for winter.

Concrete Floor for Winter Cases

Question.—Would a concrete slab the size of a winter case for two hives be in any way detrimental to good wintering?
New York. Howard Grimble.

Answer.—If the hives are raised up on supports a few inches above the concrete floor and the space between filled with packing material, the concrete floor should be entirely satisfactory. If the hives were set directly upon the concrete floor the lower portion of the hives would become too cold, causing the lower portion of the combs to mold during the winter.

Percentage of Loss in Feeding

Question.—In feeding sugar syrup, what per cent is stored in the hive and what per cent is consumed while storing?
Arkansas. John Klanholt.

Answer.—This depends upon the time the feeding is done, as well as upon the consistency of the syrup. When thin sugar syrup is fed, making it necessary for the bees to ripen it, more is consumed than when thick syrup is fed which needs but little ripening. When the feeding is done in October to supply winter stores the bees are inclined to be much less active than during the summer when brood-rearing is in progress. Much less of the food is consumed by the bees when fed late than when fed during the active season. However, even when the feeding is done after brood-rearing has ceased, some of the syrup is consumed during the process of feeding. As a rule, when sugar syrup made of two parts of sugar to one part of water is fed after brood-rearing has ceased the gain in the weight of the hive is about equivalent to the number of pounds of sugar used in making the syrup. In other words, the feeding of three pounds of syrup made of two pounds of sugar and one pound of water results in the storage of only a little over two pounds of slightly heavier syrup in the combs. Assuming that the three pounds of syrup is ripened to about the consistency of honey there should be two and one-half pounds stored in the combs if none were consumed. Since only about two pounds are usually stored, apparently nearly one-fifth of the actual sugar content of the syrup is consumed during the process of feeding, or immediately after, before the bees again become quiescent.

Making Syrup with Cold Water

Question.—Since heating syrup for making winter feed for the bees is a rather tedious job when one does not have proper facilities, will you kindly advise whether it is safe to feed the entire apiary syrup made with cold water as Jay Smith advises on page 105 of "Queen Rearing Simplified"? We have cold winters here and feeding for winter is a very important detail. J. W. Grady.
New York.

Answer.—Sugar syrup made by the cold process should be just as good if not better than when heat is used in making it, provided it is fed early enough so that it will be properly ripen-

ed. It must be remembered that cold water does not dissolve as much sugar as the same amount of hot water, so that syrup made by the cold process is not as heavy as when heat is applied. When this thinner syrup is fed early enough, it is inverted to a greater degree than is thick syrup fed later, so that there may be less danger of granulation in the combs. However, most beekeepers prefer to make the syrup thicker and feed it after brood-rearing has ceased, so that it will be stored where the brood has emerged and where it will be used first during the winter. If feeding is done too early, the bees sometimes gather inferior honey from later flowers, which is stored below the sugar syrup where it will be used first during the winter, often resulting in dysentery. Another reason for late feeding is that there is less waste when feeding is done after brood-rearing has ceased than before, since the bees then store it in the combs quickly and almost immediately quiet down, so that there is less excitement than when fed earlier. This extra activity wastes both food and bee vitality.

Influence of Early Packing Upon Brood-Rearing

Question.—Has it ever been determined what difference it makes in the amount of brood reared in the fall when the bees are packed about the middle of September instead of in October, the colonies in each case having young queens and plentiful stores?

Canada. H. H. McKeil.

Answer.—We do not know of any carefully conducted experiments to show the difference between the amount of brood reared when bees are packed early and when they are packed late. It is doubtful if brood-rearing could be much prolonged by packing in September instead of in October. However, it frequently happens that the bees cluster away from a portion of the brood in unpacked hives, thus leaving some of the brood to chill during cool nights, just before brood-rearing ceases, which loss could be prevented by earlier packing. Most beekeepers pack their bees in October on account of the other work being out of the way at that time and the weather usually being favorable for this kind of work.

Cause of Paint Blistering on Hives

Question.—What causes the paint to blister off of my hives? Troy M. Henry.

Pennsylvania.

Answer.—The usual cause of paint blistering as you describe is moisture in the wood. If the wood is wet or contains considerable moisture when the paint is applied, blistering may occur. Even though the hives are perfectly dry when the paint is applied, the condensation of moisture on the hive walls on the inside may result in blistering. This often happens in bee cellars that are too cold or in hives that are wintered without packing cases out of doors. When wintered in this way the hive walls become so cold that the moisture is condensed on the inside, and it finally works its way through the wood, causing the trouble you mention. This blistering can be remedied by raising the temperature of the cellar or by packing the hives out of doors, as the case may be.

Destructiveness of the Brood Diseases

Question.—Which is the more destructive, American foul brood or European foul brood?

Ohio. Raymond Miller.

Answer.—These two brood diseases behave quite differently in the apiary. American foul brood spreads slowly and the percentage of infected colonies is usually comparatively small, seldom being above 5 per cent except in apiaries that have been neglected. Where this disease attacks a colony the proportion of larvae and pupae that die gradually increases unless it is treated by the beekeeper, until the colony is so depleted that it swarms out if in summer or dies during the winter or the spring. On the other hand, European foul brood spreads rapidly in an apiary, the percentage of colonies infected often being 75 or more. The proportion of larvae that die from this disease is greatest in the spring and often decreases as the season advances, and in many cases the colonies, if strong, are able to clean out the dead material, entirely ridding themselves of the disease. European foul brood is usually more destructive than American foul brood when it first invades an apiary, especially if the bees are blacks or hybrids, which do not resist the disease as well as do Italians. Later, however, the same disease usually becomes less destructive, owing to the better beekeeping methods made necessary by its presence. Taken as a whole, American foul brood is no doubt the more destructive of the two diseases.

Fermented Honey for Winter Stores

Question.—Would fermented honey be injurious as a winter food for bees?

Ohio. Grant Shoop.

Answer.—Successful wintering in the North depends so much upon having stores of good quality that it would not be advisable to feed fermented honey for winter. It would be safer to save this honey until spring, then feed it to the bees for brood-rearing. In localities where the bees fly frequently during the winter they will winter well on very poor stores; but in the northern states where they are sometimes confined to their hives without a flight for several weeks at a time it is not safe to risk anything but the best of winter stores. For colonies that are short of stores now, the safest way is to feed sugar syrup made of two parts of granulated sugar to one part of water.

JUST NEWS
Editors

The Northern Illinois and Southern Wisconsin Beekeepers' Association will hold its annual meeting at Rockford, Illinois, October 20. Further particulars may be had by writing to Court D. Huggans, Secretary, at Polo, Illinois.

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Prof. R. L. Parker, who recently completed some post-graduate work in beekeeping under Dr. E. F. Phillips at Cornell University, has accepted the position recently vacated by Dr. Merrill in the Kansas State Agricultural College, Manhattan, Kansas, where he has already taken up his duties as professor of beekeeping in that institution.

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The Pacific International Honey Exhibit will be held in Portland, Oregon, from October 31 to November 7, in connection with the Pacific International Live Stock Exhibition. Producers everywhere are invited to send honey for exhibition to the Oregon State Beekeepers' Association, which has charge of this exhibit. J. Skovbo, Hermiston, Oregon, has this in charge.

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A mass meeting of Arkansas beekeepers has been called for 10 a. m., Thursday, October 15, in the Auditorium Tent on the Arkansas State Fairgrounds in the city of Little Rock. This is during State Fair week. Further information in regard to this meeting can be had by writing to the Co-operative Extension Work in Agriculture and Home Economics, State of Arkansas, 310 Donaghey Building, Little Rock, Arkansas.

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Department Circular No. 364, "The Color Grading of Honey," is now ready for distribution and may be obtained by writing to the Bee Culture Laboratory, Bureau of Entomology, Washington, D. C., or to the Bureau of Agricultural Economics. This circular contains an outline of the investigation of colors of honey from various sources in preparation for standardizing the grades of extracted honey, a description of the new government grader, and the United States standard grades.

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Miss Florence Naile, Secretary of the Ohio State Beekeepers' Association, was instrumental in raising a fund of $62.50 at the state field meeting at Delphos on August 20, for the beekeeping library at Cornell University. This is to form a memorial to L. L. Langstroth, "Father of American Beekeeping," who lived in Ohio during the latter part of his life, and whose name is to be inscribed in the volume purchased each year from the income of this money in accordance with an arrangement by which any donations to the Cornell beekeeping library amounting to $50.00 or more carries this privilege.

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James I. Hambleton, of the Bee Culture Laboratory, Bureau of Entomology, Washington, D. C., announces that samples of honey may be sent to the bureau for grading by those who do not have access to a honey-grader. A certificate will then be issued giving the grade of the sample of honey. There is no charge for this service. At least four ounces of honey should be sent for this purpose, properly packed in a mailing tube. The samples submitted will be kept at the laboratory to be used in the study of the changes in the composition of honey due to age and other causes.

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The Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C., announces that the yield of surplus honey per colony to July 10 this year is 29.9 pounds, according to statistics gathered by the bureau. The average yield to July 1 for the preceding ten years is 21.4 pounds. Last year the average yield per colony to July 1 for the United States was 18 pounds. Exact comparisons with last year can not be made on these figures on account of the change in the date from July 1 to July 10. In some of the large commercial producing areas the bulk of the crop is stored during August, therefore the figures will be greatly modified when the final reports for the season are in.

* * *

Isaac Hopkins, well known throughout New Zealand and Australia as the "Father of Australasian Beekeeping," died at his home in Auckland, N. Z., on July 20. Mr. Hopkins introduced the Langstroth hive into Australasia, and it was chiefly through his writings that the Langstroth hive is universally used in Australasia today. He discovered the presence of foul brood in New Zealand and was active for many years in its control through legislation and apiary inspection work. He was author of the Australasian Bee Manual, which is the beekeepers' text-book for Australasia, and his name stands out among those who have become world figures in beekeeping.

BEES, MEN AND THINGS
(You may find it here)

"The bean honey crop is almost a failure here on account of scant moisture." — M. H. Mendleson, Ventura County, Calif.

"Bees here are in good condition for winter, with plenty of honey, but the stores are not quite as good as usual." —E. D. Townsend, Gratiot County, Mich.

"All honey here this year is either light amber in color or amber. I never saw this before at this altitude, 4600 feet above sea level."—M. A. Gill, Cache County, Utah.

"The prices on clover honey are down on the New York market, probably due to increased competition from western sweet clover honey."—R. B. Willson, Tompkins County, N. Y.

"The fall honey flow is better than usual and the quality of the honey is good. This may bring the total crop above an average of 60 pounds per colony."—Floyd Markham, Washtenaw County, Mich.

"The Western Washington Beekeepers' Association will handle 80 per cent of the honey produced in three counties here this season, bottling and selling direct to consumers."—W. L. Cox, Grays Harber County, Wash.

"We will not have quite as much honey this year as last on account of too much rain. I produced some clover honey in sections, but the quality is not as good as it is some seasons."—W. J. Simmons, Gentry County, Mo.

"We have a premium list of $198.00 for our Karnes County Fair, Kenedy, Texas, on bees, honey, and honey products. How does this compare with other county fairs in other states?"—M. B. Hinton, Karnes County, Texas..

"Many of my hives are stacked up with supers as high as my head, like some of the illustrations in Gleanings. During the late afternoons on hot days the bees hung out on the fronts of the hives by the bucketful, although the supers were staggered for ventilation." — J. B. Walsh, Gooding County, Idaho.

"The drouth has cut the late honey flow to zero, leaving a few unfinished sections and some colonies that will need to have some honey replaced. I am still extracting and the yield may reach 170 to 175 pounds per colony. All in all, the season has not been so bad. Beekeepers are satisfied and prices are a little better than a year ago."—J. Howard Wagner, Merrick County, Neb.

"Oregon is perhaps unique among western states in that it consumes more honey than it produces. Since Portland is the center of the honey trade here, the Pacific International Honey Exhibit, October 31 to November 7, offers an exceptional opportunity for displaying honey to the consumers of the northwest."—J. Skovbo, Umatilla County, Oregon.

"The bee-men of this district have been very much disappointed about the honey crop. Thus far we have an average of about 40 pounds per colony, and that is all we expect unless things change and we have a third honey flow. It has been too hot during the day and too cold at night. Everything has gone backward since July 10. We are hoping for better luck next year."—A. D. Wood, Malheur County, Oregon.

"In regard to what Leslie Burr says on page 588, September issue of Gleanings, about needing a crooked knife for poorly filled combs, I have used crooked knives for years and have had lots of thin combs in short crops. However, I never once thought of using anything but the point for hollows or low places. To try to use the heel would seem quite too awkward. My straight knife has just as good a point as any other, so it is quite as good for thin combs; and when combs are nicely bulged you can step on the gas and leave the fellow with the old-fashioned knife miles behind. Of course, every knife should be heated by steam in any case."—Morley Pettit, Halton County, Ont.

"August is the month that the North Dakota beekeeper usually counts upon as being the best, but this year it was very disappointing. The normal rainfall for the month of August in eastern North Dakota over a period of 44 years is 3.10 inches. This year our rainfall for the month was one quarter of an inch, making a deficit of 2.85 inches, the driest August since the establishment of the weather bureau in this vicinity in 1881. Records for heat and cold were also made this month, the maximum being 99 degrees and the minimum 43 degrees, both of these temperatures being recorded within a two-day period. The extreme drouth has cut the honey crop to much less than was expected; but September has brought rains, and with characteristic optimism the beekeeper is still hoping for a late honey flow to make up for a dearth during the summer.—M. C. Tanquary, Cass County, N. D.

XUM

A. I. Root's Story of His Own Life

I made me great works; I builded me houses; I planted me vineyards; I made me gardens and orchards, and I planted trees in them of all kinds of fruits; I made me pools of water to water therewith the wood that bringeth forth trees.—Ecc. 2:4, 5, 6.

In the spring of 1867 I made a machine for removing honey from the combs. Other machines, according to descriptions I saw, had been made of wood. I thought tin would be nicer and so had a can made about two feet high and 18 inches across. The frame for holding the wire cloth to support the comb was made of galvanized wire such as was used for the white wire clothes-lines. As I used both the American and Langstroth hives, I made the frame-work to accommodate both sizes of comb. The machine worked to a charm.

I had some labels printed for self-sealing fruit-jars, with a blank space left so I could fill in the kind of blossom from which the honey had been gathered. For instance, when we had honey from cherry blossoms, raspberry, locust, white clover, etc., I could fill in the particular kind of honey. I had no trouble in getting $1.00 each for quart jars holding three pounds, jar and all, and the different kinds of honey as labeled were readily distinguishable.

The first time I used the honey-emptying machine I took out 15 pounds; six days later, from the upper story only, I took 36 pounds; five days after, 45 pounds more; in six days again, 25 pounds; five days later (July 13) 42 pounds, making in all 163 pounds of nicer honey than I had even seen before. This was from an Italian colony in a two-story Langstroth hive. The heaviest yield from a black colony, that I had ever heard of, was less than 40 pounds in a season.

I conceived the idea of having an extra set of empty combs to commence with, so that I could replace full combs taken out with empty combs, in order to open the hives but once. I put boxes on only two hives that season, and I really felt as if I did not want to see any more honey in boxes. It was such a miserably slow business to get them filled and it seemed to me that anyone who had taken honey clear as crystal in the neat and clean way in which it could be put up, would not care to have beeswax mixed with it anymore.

[This was before the invention of comb foundation and the section-honey box. The boxes referred to were simply empty boxes that were inverted over a hole in the honey-board, which was similar to the present inner cover. Bees were usually very slow in beginning work in these boxes. — Editor.]

Description of the Honey-Emptying Machine

The can of my machine was made of tin and was two feet high and 18 inches across, with straight sides. This size would hold frames from both the American and the Langstroth hives. I had a straight piece of ¾-inch iron rod for a shaft, and I soldered in the center of the bottom a piece of iron with a hole drilled partly through for the bottom bearing. For the top bearing I had a piece of wood 2 inches thick and about 3 inches wide in the middle and curving out broader at each end to 5 inches, and cut so as to slip closely over the edge of the can to steady it. For propelling power I had the crank and gearing of a malleable-iron apple-parer.

With an assistant I emptied, weigned, and sealed 285 pounds of honey in three-fourths of a day. We poured the honey into a large jar with strainer attached and it was then run by a faucet into the self-sealing pint jars, which stood on a pair of scales so that the honey could be quickly and accurately weighed.

From twenty colonies in the spring, some of which were quite weak, I secured 1000 pounds of honey, an average of 50 pounds per colony, and increased the number of colonies to forty.

At that time I preferred to take out the honey just before it was sealed, or when it showed a little sealing near the top of the frame. The bees were inclined to be a little cross when the hive was first opened, but when the first frame was shaken over the sawdust in front of the hive the bees would become alarmed, even if hybrids, and commence filling themselves with honey. Not all of the bees could be shaken off, so I used a turkey-quill for a brush.

Heavy Crop from Basswood

In 1870, I had prepared for 2000 pounds, but by the middle of June my jars were all full and I sent in haste for as many more. The bees would not stop bringing honey in, so I borrowed all the

tin wash-boilers in the neighborhood. These the bees filled in a jiffy. I borrowed more, but the honey came in torrents. Monday came and the women in the neighborhood could not wash because I had their boilers full of honey. Meanwhile my bottles did not come, but the honey did. I even talked of scouring out the cistern and filling that, too. By July 6 I had put over 5000 pounds of honey into jars, and yet the basswood was just at its height.

The whole quantity of honey that I secured that season (1870) was 6162 pounds. Of this I sold over 2000 pounds in June and July for 30 cents a pound, jars and all. Besides this my 46 colonies were increased to 64; and as the upper frames were all full and I had more bees than the hives could hold, I proposed to raise queens in the fall and make new swarms of the upper stories, perhaps eighteen more.

My honey that sold at 30 cents a pound was at retail. The commission, freight, leakage, cost of boxes, labor, etc., made quite a hole in the 30 cents. In September I shipped the last of the three tons.

In 1871 I received over $1000 cash for my honey, while a neighbor who had an equal number of colonies and an extractor, too, received less than $100. When asked why he had no more he replied that his farm kept him so busy that he could not take care of his bees; and yet the whole product from his farm for the year was worth less than half the value of the honey he allowed to waste. Such cases are common.

Extracting Unripe Honey

The first clover honey I extracted in 1875 was simply sweetened water, and although the hives were full, I stopped extracting and put on upper stories. This thin honey was mixed with some that was thicker, allowed to stand in an open tin can for a week or ten days, then was put into a barrel for retailing. The first that was drawn off was very fair; but apparently the thin honey went to the top, for toward the last it was like water and it finally soured. All who had used it were given some better honey without extra charge, as I had little disposition to risk my reputation selling such a poor grade of honey as that.

Extracting from Combs in Lower Stories

By 1876 I had decided to discontinue the practice of extracting from the lower combs. Of course, if the hive contained no upper story I would have to extract the heaviest of the combs in order to provide room. In case of a comb-honey hive, if the combs below were full and the bees seemed disinclined to store in the boxes, I would extract the honey in order to set them at work at once.

Tiering Up and Extracting at End of Season

During the season of 1876, by the use of empty combs I entirely prevented swarming. The plan I adopted was to put in one less comb in the upper stories than usual, and to spread the combs as fast as the cells became lengthened. Of course the first second story soon became filled, and I then put one with empty combs under the one that was partly capped over. In this way I did not intrude on the brood department any more than in the case of a colony run for box honey. Besides, if one had plenty of empty combs, which every beekeeper ought to have, I culd see that it would be possible to keep putting on upper stories and do the extracting at some convenient time, or even hire cheap help to do it. In this way the honey would be as fully ripened as the most fastidious could desire.

Honey That Was Perfectly Ripened

In the fall of 1876 I discovered that honey in combs that had been on the hives perhaps a couple of months after being capped over did not candy at all, even though left in the liquid state below zero temperature. It was so thick that a jarful might be turned over without even ruffling the surface when thus cold, and yet it was like clear glass. For table use it was ahead of any honey I ever ate. This made me feel rash enough to say I would never extract any more honey until every bit of it had been sealed; and if keeping it on the hive several weeks later would prevent candying entirely I felt that I would do that too.

On May 1, 1877, my apiary numbered about 75 colonies. That season I sold bees, honey, and queens to the amount of about $1000, as nearly as I could estimate. I paid out for labor in the apiary about $100. On account of the dry weather this season was not an average one, but the net yield per colony, $12.00, was about as good as I averaged one year with another.

At the price I received for my honey, it doubtless would have paid better to have raised honey exclusively. Several times I took tested queens from full colonies at work in the supers, and the result was a loss of honey invariably amounting to much more than the value of the queens. Notwithstanding such a drawback, I felt it was well for all beekeepers to prepare themselves to sell bees, queens, and honey.

XUM

Classified Advertisements

Notices will be inserted in the classified columns for 7c per word. You must say you want your advertisement in the classified columns, or we will not be responsible for errors. For special conditions on bee and queen advertising please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy if credit has not been established previously.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontnued when they are in good standing.)

Wm. M. Baldwin, Harry W. Beaver, W. I. Boggs, Hazel V. Bonkemeyer, Noah Bordner, Alice D. Burrows, Citronelle Apiaries, Crenshaw County Apiaries, J. M. Cutts, E. F. Day, Daniel Danielsen, W. J. Forehand & Sons, G. A. Gust, Emil W. Gutekunst, Albert G. Hann, Hayneville Apiary Co., John C. Hogg, D. W. Howell, L. M. Hubbard, Jensen's Apiaries, Jasper Knight, Fred Leininger & Sons, M. P. LeMunyon, F. A. Lockhart & Co., J. F. Michael, Geo. Morrison, E. E. Mott, North Dakota Bee Supply Co., Norman Bros., Julian Root, A. I. Root Co. of Iowa, A. I. Root Co. of Philadelphia, David Running, F. M. Russell Co., Ross B. Scott, Jay Smith, W. C. Smith & Co., Chas. Stewart, T. J. Talley, L. A. Thrall, Electric Mill Co.

HONEY AND WAX FOR SALE

NEW comb honey now ready to ship. H. G. Quirin, Bellevue, Ohio.

COMB and extracted honey—none finer. H. J. Walters, Burgoon, Ohio.

FOR SALE—White clover comb honey. Lewis O. Klaty, Carsonville, Mich.

FOR SALE—Fancy comb honey. Quality unexcelled. J. D. Beals, Oto, Iowa.

CLOVER honey in new 60-lb. cans. Sample, 15c. W. B. Crane, McComb, Ohio.

WHITE clover honey, also light amber in new 60's. J. N. Harris, St. Louis, Michigan.

CHOICE clover honey in new 60-lb. cans, 12c per lb. Henry A. Meyer, West Point, Nebr.

NEW crop buckwheat honey, 60-lb. cans, 8c; 5-lb. pails, 12c. M. L. Freeman, Harlan, Mich.

NEW crop sweet clover honey, fine quality, in 60-lb. cans. Oscar Peterson, Braceville, Il.

NEW crop white clover honey in 60-lb. tin cans. Write for prices. D. R. Townsend, Northstar, Mich.

NEW comb and extracted clover honey. Prices on request. Irvin A. Stoller, Latty, Ohio.

HONEY for sale, any kind, any quantity. The John G. Paton Co., 217 Broadway, New York City.

EXTRACTED HONEY FOR SALE—Clover, buckwheat, any kind of package. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—In 60-lb. cans, Alabama sweet clover honey, rich and ripe, 10c per lb. f. o. b. Joe. C. Weaver, Cochrane, Ala.

FOR SALE—Extracted, comb and chunk honey. Prices on request. Sample 15c. F. W. Summerfield, Waterville, Ohio.

Extra quality sweet clover honey. Write for prices. Sample 15c postpaid. Wm. Bigel, Barrington, Ill.

FOR SALE—Extracted and comb honey. North Dakota Bee Supply Co., 701 Center Ave., Moorhead, Minn.

FOR SALE—Extra fine clover honey in new 60-lb. cans two to the case, at $14.00. Adam Bodenschatz, Lemont, Ill.

FOR SALE—White clover and buckwheat honey, 60-lb. cans and 5-lb. pails. Seward Van Auken, Duanesburg, N. Y.

FANCY raspberry blend honey in 5-pound pails at $8.40 per doz. Sample, 20c. Lewis A. McIntire, Boyne City, Mich.

OUR EXCELLENT extracted clover honey now ready for shipment. Write for prices. Sample 20c. Appeldoorn, Hamler, Ohio.

FOR SALE—Fine white clover honey in new 60-lb. cans, 5 and 2½ lb. pails. O. H. Roth, R. F. D. No. 2, Reese, Mich.

FOR SALE—Finest flavor clover extracted honey, 12c per lb. in 120-lb. cases. Send for sample. T. J. Rowe, Northstar, Mich.

FOR SALE—New crop clover honey in good second-hand 60-lb. cans, 2 in a case, $14.00 per case. Chas. W. Zweily, Willow Springs, Ill.

FOR SALE—Over 50,000 lbs. of very choice white clover extracted and chunk comb honey. Write for prices. J. M. Gingerich, Kalona, Ia.

FOR SALE—Choice 1925 crop clover extracted honey in new 60-lb. cans and cases. Prices on request. W. X. Johnston, Port Hope, Mich.

FOR SALE—Choice fancy 1925 crop white clover extracted honey in new 60-lb. cans, 12c per lb. Sample, 10c. Edw. A. Winkler, Joliet, Ill.

FOR SALE—Light, amber and dark extracted honey in 2½'s, 5's, and 60's. Prices on request. O. H. Schmidt, Bay City, Rt. 5, Mich.

WATER-WHITE clover chunk honey in five and ten pound pails. Finest in the world. Prices made on request. M. C. Berry, Box 697, Montgomery, Ala.

GOLDENROD and buckwheat comb honey in 4¼ beeway sections for sale at reasonable prices. Quality very good. H. E. Crowther, Jefferson, Ohio.

HONEY FOR SALE—New crop finest quality, put up in 60-lb. cans, also 5-lb. pails. Prices on request. W. M. Peacock, Mapleton, Iowa.

WHITE clover honey, new, 60-lb. cans, one to three cases, 12c; 3 cases or more, 11½c per lb. Sample, 20c. Hoehn & Honigford, Ottoville, Ohio.

FOR SALE—White clover honey in 60-lb. cans. Thoroughly ripened before extracting. Two cans to the case. Frank Coverdale, Maquoketa, Iowa.

CLOVER and basswood honey blended by the bees. Color white, body fine. Prices upon request. State amount wanted. W. A. Jenkins, Rock Port, Mo.

CHOICE honey for sale in 60-lb. cans, clover, 13c; buckwheat, 10½c lb. f. o. b. Pembroke. Sample, 10c. John N. Demuth, Pembroke, N. Y.

NEW 1925 "Townsend Quality" extracted honey now ready for the market. New cans and cases. None better. Address E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—Finest clover honey, ripe and light in color, in new 60-lb. cans and cases. Also 5 and 10 lb. pails. Sample, 15c. A. S. Tedman, Weston, Mich.

HONEY FOR SALE in 60-lb. tins. Clover, crystallized, at 13c per pound; clover, liquid, at 14c per pound. Hoffman & Hauck, Inc., Ozone Park, N. Y.

FOR SALE—New York State clover comb and extracted honey, any quantity. Write for prices. A. I. Root Co. of Syracuse, 1631 W. Genesee St., Syracuse, N. Y.

WATER-WHITE clover honey in 5-gal. cans, f. o. b. shipping point, 11c a pound. Amber mixed honey, 9c a pound. Sample, 15c. M. C. Berry, Montgomery, Box 697, Ala.

NEW 1925 crop extracted clover honey, thoroughly ripened, finest quality. No disease. In new cans and cases, 120 lbs. to case. Prices on request. Harry C. Kirk, Armstrong, Iowa.

FOR SALE—Our fine quality 1925 crop white and sweet clover honey, put up in 60-lb. cans, two to a case. Write for prices. Sample, 20c. Martin Carsmoe, Ruthven, Iowa.

FOR SALE—Choice extracted honey, two 60-lb. cans in case. White clover, $15.00 per case; light amber, $13.50 per case; buckwheat, $12.50 per case. J. G. Burtis, Marietta, N. Y.

FOR SALE—Extra quality clover extracted, $7.80 per can. Two or more, $7.20. No. 1 clover comb, $5.50 per case. Four or more, $5.00. Satisfaction guaranteed. F. W. Lesser, Fayetteville, N. Y.

FOR SALE—Clover basswood comb honey, fancy and No. 1 packed 8 cases to carrier, also clover basswood extracted, in new 60-lb. cans, 2 cans to case. Buckwheat extracted in new 60-lb. cans. Silsbee Apiaries, Bath, N. Y.

FOR SALE—Sweet clover and white clover honey in 60-lb. cans. White to water-white in color and heavy body. Beekeepers who need honey for their trade and solicitors, write for prices. The A. I. Root Company of Iowa, Council Bluffs, Iowa.

RASPBERRY HONEY left with the bees until thoroughly ripe. Is thick, rich and delicious, unexcelled for table use. In new 60-lb. cans, 15c a lb. 10-lb. cans by mail, postpaid, for $2.50 each. Sample by mail, 15c. Elmer Hutchinson & Son, Lake City, Mich.

HONEY—Free wholesale quotations on 1925 crop of white clover extracted honey in 60-lb. cans, 5 and 10 lb. pails, 3 oz., 8 oz., and 17 oz. tumblers. Also white comb and buckwheat comb and extracted. Roscoe F. Wixson, Sales Dept., Dundee, N. Y.

FINEST quality clover honey in cases of two 60-lb. cans, $15.00. Buckwheat, $12.00 per case. Comb honey No. 1, $5.50; mixed and buckwheat, $4.50, 24 capacity case. Satisfaction guaranteed. All f. o. b. here. Ed. Reddout, New Woodstock, N. Y.

FOR SALE—Honey in 60-lb. cans. Sweet clover, basswood, white clover, buckwheat, and other flavors. Tell us what you want. Beekeepers who need more honey for their trade, and solicitors should write us. A. I. Root Co. of Chicago, 230 W. Huron St., Chicago, Ill.

HONEY FOR SALE—For the beekeepers whose supply may be short this season. We have the choicest extra quality sweet clover, fine white clover, alfalfa, some mesquite and a limited amount of orange that we can offer our friend honey-sellers who may be short. Also comb, all grades. Write for prices. The A. I. Root Co., Medina, Ohio.

OUR water-white, new crop clover honey is now ready for sale. This honey is sweet clover blended with little Dutch white clover. Price, 10½c, f. o. b. Moville, Iowa. This honey is packed in good used cans, 120 lbs. to the case. Please do not write for lower prices. Cash must accompany all orders. We guarantee this honey to be as described. Weaver & Son, Moville, Iowa.

SWEET clover honey in 60-lb. cans, $8.00 each; two or more at 13c lb. William Knapp, Cissna Park, Ill.

EXTRA white honey in 60-lb. cans, 12c per lb. in large lots, f. o. b. Blackwell. F. C. Gentz, Blackwell, Wisconsin.

FINE QUALITY CLOVER HONEY. Prices upon request. Case or carload lots. C. S. Engle, 1327 23rd St., Sioux City, Iowa.

FOR SALE—New crop northern Michigan raspberry clover and buckwheat honey. New cans. Sample 15c. C. J. Freeman, Mesick, Mich.

NEW crop fine quality clover honey, $13.75 per case of 120 lbs., 2 cans to case. Let us supply you early. W. D. Achord & Son, 320 Howard St., Findlay, Ohio.

CLAFONY QUALITY HONEY. Clover (with about 10% buckwheat) in 60-lb. cans, 2 to case, 11c; single cans, 11½c. Liquid, 1c more. Buckwheat in 160-lb. kegs, 10c. Clarence Foote, Delanson, N. Y.

FOR SALE—Fall crop of comb honey, mostly buckwheat, 24-section cases, weighing 21 lbs. and over at $4.00 per case; No. 2 at $3.50 per case, six or eight cases to carrier. Buckwheat extracted, 60-lb. cans, two cans to the case, $12.00 per case, 5-lb. pails at 75c; No. 2 white clover comb honey at $4.00 per case. All prices f. o. b. here. Chas. B. Hatton, Andover, R. F. D. 3, Ohio.

HONEY AND WAX WANTED

WANTED—Comb and extracted. J. E. Harris, Box 178, Morristown, Tenn.

WANTED—White clover comb honey. Glass-front case preferred. E. W. Peirce, 345 Cliffwood Ave., Zanesville, Ohio.

WANTED—Honey in ton lots or more. Mail sample and quote lowest price. C. J. Morrison, 1235 Lincoln Way West, South Bend, Ind.

WANTED—"Off grade" honey, any amount. State condition, quantity, price. Large sample necessary. Arthur Husted, 1202 Grant Street, Madison, Wisconsin.

BEESWAX WANTED — Highest market prices paid. Cash or in exchange for supplies. Write us for quotation before shipping elsewhere. The A. I. Root Company, Medina, Ohio.

WANTED—A car or less quantity of clover honey in 60-lb. cans. Mail sample and quote lowest cash price for same; also send for my cut price circular on cans and pails for honey containers. A. W. Smith, Birmingham, Mich.

FOR SALE

FOR SALE—Soiled granulated cane sugar for bee feed. Winkler Honey Co., Joliet, Ill.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—Large collection of beekeeping literature. Louis A. Loboda, 1301 Fifth Ave., Milwaukee, Wis.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—In one of the garden spots of the world. No frost. Always green. 400 colonies of bees in three locations. Seven-room frame house, outbuildings. Stock valued at $2000. Will sell part or all of above at sacrifice. Sickness cause of sale. Penn G. Snyder, Aihonito, P. R.

MAKE queen introduction SURE. ONE SAFIN cage by mail, 25c; five for $1.00. Allen Latham, Norwichtown, Conn.

FOR SALE—Six acres of fine land, six-room cottage, plenty of fruit trees, all varieties, 3 acres land in Newington, Ford truck, 140 colonies healthy bees, most all requeened, 600-egg incubator, 500 white Leghorn chickens, 2 brooder houses and stoves, 1000-chick capacity, 500 queen-mating nuclei with a lot of other equipment too numerous to mention, 40 quadruple winter cases. Honey and other produce sold locally in large manufacturing district and at good prices. Will be glad to show this to any one who can come and look it over. Price, $13,500.00. A. E. Crandall, Berlin, Conn.

BEES AND QUEENS

WHOLE colonies of bees, if advertised for sale in these columns, must either be guaranteed free from disease, or, if not so guaranteed, the exact condition of the bees and the conditions of sale must be clearly stated in the advertisement; or, it will be satisfactory if the advertiser will agree to furnish a certificate of health from some authorized bee inspector at time of sale.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

QUEEN BEES in season, $1.00 each. Graydon Bros., Rt. 4, Greenville, Ala.

1926 PACKAGE BEES—Pure Italians. Write for prices. J. J. Scott, Crowville, La.

WHEN IT'S GOLDEN, IT'S PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

LEATHER-COLORED Italian queens, $2.00 until June 1; after, $1.00; tested, $2.00. A. W. Yates, 15 Chapman St., Hartford, Conn.

SHE-SUITS-ME queens. Untested 3-banders, $1.00 each; 25 or more ordered in advance, 75c each. Safin cage with initial order. Allen Latham, Norwichtown, Conn.

FOR SALE—Any number up to 50 colonies of fine three-band Italian bees in Root 10-frame standard hives. Guaranteed free from disease. Noah Bordner, Holgate, Ohio.

GOLDEN ITALIAN queens, producing large beautiful bees, solid yellow to tip. Package bees, nuclei circular, 1926 ready free. Dr. White Bee Co., Sandia, Texas.

WILL sell our three-banded "Autauga" Italian queens for 50c each as long as they last. Closing queen yards for this season. Autauga Apiaries, Autaugaville, Alabama.

LISTEN—To every new customer answering this advertisement we will sell two of our famous Italian queens at half price. Two for $1.00. Carolina Bee Co., Graham, N. Car.

FOR SALE—100 colonies three-band Italian bees in 10-frame Root hives, also 100 colonies in 8-frame hives. Guaranteed free from disease. Inspected in July. Silsbee Apiaries, Bath, N. Y.

FOR SALE—125 hives Italian bees. Complete standard 10-frame equipment for extracted honey production. Colonies guaranteed to be in good condition and free from disease. Excellent location for queen and package business. Write for particulars. J. J. Patton, Foster's, Ala.

FOR SALE—25 colonies good Italian bees. Guaranteed free from disease. Perfect combs from full sheets foundation, well wired. 65 shallow extracting supers and combs. Extractor and other equipment. Must be sold! Investigate! Ira Gould, Beatrice, Nebraska.

THREE-BAND Italian bees and queens. No disease. Inspected by state inspector. Select untested queen, $1.00; $10.00 per doz.; select tested, $1..50. J. Allen, Catherine, Ala.

GOLDEN ITALIAN queens for sale, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. Package bees in season, 20 per cent to book your order for spring delivery. J. F. Rogers, Greenville, R. F. D. No. 3, Ala.

BRIGHT American Beauty Italian queens and bees. Untested queens, $1.00, 3 or more, 75c each; $8.00 a dozen. Three-frame nuclei, $5.00. Guarantee safe arrival. Tupelo Apiaries, J. L. Morgan, Apalachicola, Fla.

HOLLOPETER'S Italians bred for business. We can still give prompt service. Selected stock, safe arrival and satisfaction guaranteed. September prices: Untested, each $1.00; three, $2.50; six, $5.00; ten, $8.00. J. B. Hollopeter, Rockton, Pa.

GOLDEN ITALIAN QUEENS—Untested, $1.00; 6 for $5.40; 12 or more, 80c each. Tested, $1.50; select tested, $2.50. Apiary inspected by state inspector; no disease found. Safe arrival and satisfaction guaranteed. D. T. Gaster, R. F. D. No. 2, Randleman, N. C.

FOR SALE—Three-band Italian queens that produce hardy and gentle bees, the kind that get the honey. Untested, 80c each; 6 for $4.75; 12, $9.00. Tested queens, $1.50 each. Queens in larger lots for requeening, write for prices. Safe arrival and satisfaction guaranteed. Robt. B Spicer, Wharton, N. J.

QUEENS—When you need a good queen you may be sure you will get one of Laws' best by return mail. Can furnish every month in the year. Better requeen those colonies that have paid you least, and do it this fall. Price $1.00 each. W. H. Laws, Box 505, Wharton, Texas.

FOR SALE—My entire bee business consisting of 20 apiaries and queen and package business, all well located on good gravel roads right in the black belt of Alabama where the white sweet clover grows—the most ideal place in the United States for queen-rearing and package business. A health certificate will go with bees. M. S. Nordan, Mathews, Ala.

FOR SALE—700 colonies of bees, big extracting honey outfit in 8 yards. A little disease, 10 acres of land, 8 lots, 8-room home, 2-car garage, honey-house. Buildings all new. Excellent location and healthy climate. If you have the money to swing a big deal come and look this over. Will sell including honey crop or without .E. W. Fox, Fruitdale, S. D.

PHELPS' FAMOUS GOLDENS, an opportunity to try them at $1.00 each. For the first time since before the war we have kept ahead of orders, due to an exceptional queen-rearing year in this locality and a new pardner—Mrs. Treadwell of Windsor—who likes the GOLDENS and is as interested as we are in producing the best queens. C. W. Phelps & Son, Binghamton .N. Y.

ATTENTION, NORTHERN HONEY PRODUCER—ST. ROMAIN QUALITY BEES ready for 1926 season. I am in position to furnish several carloads of nuclei and pound packages at a very reasonable price. Shipping season starts April 1, 1926, and all bees are absolutely free from disease. I furnish health certificate with each shipment, also guarantee safe arrival. All bees shipped on comb of emerging brood and honey for feed in transit, also combless packages, if customer desires. Prices as follows: 1 2-lb. pkg. with queen, $3.00; 1 3-lb. pkg. with queen, $4.00; 1 4-lb. pkg. with queen, $5.00. Large orders will be given special attention. Address John St. Romain, Marksville, La.

FOR SALE—600 colonies of bees, half in ten-frame Buckeye and balance in single-walled hives, mostly two-story equipment, besides 1200 comb-honey supers and a quantity of extracting supers, eight-frame reversible extractor, gas engine, and tanks. All our bees for sale guaranteed free from disease. Two-story bee house, 28x40 feet, with water, gas, and electricity. Home with one acre of land in town of 1500 people, six rooms and bath, with furnace, gas, and electricity. H. E. Crowther, Jefferson, Ohio.

MISCELLANEOUS

"BEES AND HONEY" is the only bee paper in all the great Pacific Northwest—soon to be America's most wonderful beekeeping territory. Sample copy free. Gleanings ($1.00) with Bees and Honey ($1.00), both together one year for only $1.60. Address George W. York, Editor, 524 First Ave., So., Seattle, Wash.

THE BEE WORLD—The leading bee journal in Britain and the only international bee-review in existence. It is read, re-read, and treasured. Will it not appeal to you? Specimen copy free from the publishers. Send us a postcard today. It is well worth your little trouble. The Apis Club, Benson, Oxon, England.

WANTS AND EXCHANGES

WANT bees or equipment for good interest in Minnesota forty acres or quarter. A. M. Wise, Appleton, Minn.

WILL exchange package bees on comb for Remington shotgun automatic, and wall tent, 10 x 14 feet. Central Louisiana Apiaries, Hamburg, La.

WILL EXCHANGE package bees for automatic shotguns, one 12 and one 16 guage. Am also booking orders for package bees, early spring delivery. L. C. Mayeux, Hamburg, La.

"Honey Girl" Queens 100 for $80.00

When you need a queen that is a queen, order a "Honey Girl" Italian Queen. Value of orders delivered and booked in advance for delivery before July 1st is more than double the value of sales for whole season of 1924. We wish to thank our friends for their valued orders and kind recommendations.

Price List: Untested, 1, $1.25; 10, $10; 50, $45.00; 100, $80.00; 250 or more, 75c each. Select untested, add 10c per queen. Tested queen, $2.00; select tested, $5.00.

Honey Girl Apiaries, Hamburg, La.

NEW CATALOG READY

BEEKEEPERS' SUPPLIES

Root's Goods of High Quality

Three ply foundation, standard stock of supplies kept on hand for prompt shipment. Send us your inquiries and orders early for quick action.

J. NEBEL & SON SUPPLY CO.

Montgomery County High Hill, Missouri

Bee Supplies That *Are Made to* Satisfy

The three points of Rusch Service that are keeping old customers satisfied and bringing new ones are:

RIGHT PRICES,
REAL SERVICE,
HIGHEST QUALITY.

A trial order will convince you. Write for our catalog.

A. H. Rusch & Son Co.

Reedsville, Wisconsin

Last Call

To Our Customers:

We desire to thank you for your valued patronage and to let you know we are still doing our best to render good service and satisfaction. After one of the most discouraging beginnings (cold, late spring) we have had one of the most successful seasons in our over twenty-five years' beekeeping experience. Colonies headed with Hollopeter's queens are again producing around the 500-pound mark. One enthusiastic customer writes, "Colonies headed with Hollopeter's queens bring home the 'bacon'."

We can fill promptly all orders from this high-production stock until Nov. 1, at these prices:

Select untested—One, $1.00; three, $2.50; six, $5.00; ten or more, 80c each
Select tested—One, $2.50.

Safe arrival, pure mating, no disease, and satisfaction guaranteed. Not yet too late to install some of these queens in colonies with old and failing queens, or with black and hybrid stock.

Jason B. Hollopeter

Queenbreeder

Rockton, Pa.

One Billion Pieces!
AROUND THE WORLD WITH HA GLASSWARE
Some idea of the tremendous Hazel-Atlas production may be gained from a simple comparison. If all the Hazel-Atlas glassware produced in a year were placed side by side, it would encircle the world and still leave enough to streetch far out into space.
Among this huge parade are thousands of
Standard HA Honey Jars
—They have no panels to shadow and darken the contents.
HA

DESIGNERS & MANUFACTURERS

HAZEL-ATLAS GLASS COMPANY

WHEELING,—W.VA.

DISTRIBUTORS

The A. I. Root Company, Medina, Ohio.
Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.
A. G. Woodman Co., Scribner Ave. and Blumrich St., Grand Rapids, Mich.
The A. I. Root Company of Iowa, Council Bluffs, Iowa.
A. I. Root Company of St. Paul, St. Paul, Minn.

(Continued from page 683.)

from Europe for immediate shipment is reported good. Several carloads reported sold late in August to Europe at $1.07 per gal. cost and freight.

Telegraphic Reports from Important Markets

BOSTON—Since last report 95 cases Vermont, 50 cases Idaho, 1 car Porto Rico arrived. Extracted: Sales by receivers to confectioners, wholesalers and bottlers—Demand slow, market dull. Per lb., Hawaii and Arizona, light amber, mostly 10½c. Porto Rico, amber in cases, 10½c, barrels 10c; Idaho, white sweet clover, 14-15c. Comb: Demand limited; market steady. Sales by receivers to retailers, Vermont, 20-section cases white clover, 14 oz., $5.25; 12 oz., $4.50; 24-section cases, 10 oz., $5.50; 13 oz., $6.25; 14 oz., $6.50.

CHICAGO—Since last report 38,650 lbs. Minnesota, 105,865 lbs. Montana arrived. Extracted: Demand and trading fair, market steady. Sales to bottlers and confectioners, per lb., Wisconsin, white clover, 11-11½c. California and Montana, alfalfa light amber, 10½c. California, amber 10c. Comb: Demand and trading light, market steady. Sales to retailers, Illinois, Wisconsin and Iowa, white clover No. 1, $4.25; few, $4.50; No. 2, $3.00-3.75, according to quality. Beeswax: Trading light, market steady. Sales to bleachers, jobbers and electrical supply houses, California and Colorado, light color, 32-35c; dark, 27-32c per lb.

DENVER—Receipts of locally-grown honey are quite liberal. Demand light, market dull. Sales to jobbers, extracted: Colorado, white sweet clover and alfalfa, white, 12-14c; light amber, 11-13c per lb. Comb: Colorado, 24-section cases fancy, $5.50; choice, $5.10.

KANSAS CITY—No carlot arrivals since last report. Supplies moderate. Demand moderate, market steady. Sales to jobbers, extracted: Colorado, white alfalfa, 13½c per lb. Comb: Colorado, 24-section cases white sweet clover, extra fancy, $5.00; fancy, $4.75; choice, $4.50.

NEW YORK—Since last report 77,000 lbs. Wyoming, 3979 lbs. New York, and 129 crates, 25 tierces, 215 bbls. Porto Rico arrived. Demand moderate, market steady. Extracted: Sales to wholesalers, jobbers, confectioners, bottlers and bakers, 60-lb. cans, New York, white clover extra light amber, 12-12½c; few, 13c; amber mixed flavors, mostly 11c; buckwheat, 10-10½c. California, light amber alfalfa, 10-10½c; white orange, 13-15c. Intermountain section, white sweet clover, mostly around 11c. Barrels: Florida, tupelo fancy, 13c; light amber, 10c per lb. Porto Rico, amber, 90c-$1.00 per gal. Comb: New York, 24-section cases white clover, fancy, $6.00-6.25; No. 1, $5.50-5.75; buckwheat No. 1, $5.00. Beeswax: Since last report 130 bags Brazil, 16 bags Porto Rico, 32 bags Cuba, 10 seroons, 3 bags San Domingo arrived. Supplies moderate. Demand limited, market steady. Chile and Brazil, light 39-41c. West Indies, light, 38-40c; medium, 36-37c; dark, 34-35c; Africa, light, 37-38c. California, light best stock, 36-38c per lb.

PHILADELPHIA—Spot supplies light. Demand and movement slow, market weaker. Extracted: Sales to jobbers, manufacturers, bottlers, and bakers, Porto Rico and Florida, light amber holdover stock, 91c per gal.; amber holdover stock, 88c per gal. Beeswax: Prices to nearby beekeepers for crude country run wax, pale yellow to dark yellow, 31c per lb.

SAN FRANCISCO—Demand and trading moderate, market steady. Sales to jobbers, extracted: California, orange, supplies light, white, 14-14½c; light amber, mostly 12c; sage, supplies moderate, white, 12½-14c; light amber, 10-11c; star thistle light amber, 9-10c; Nevada, white sweet clover, 8½-9c. Comb: Nevada, 24-section cases white sweet clover and alfalfa, No. 1, $4.80; No. 2, $4.00.

ST. LOUIS—No arrivals since last report. Practically no supplies on market. No demand or trading account hot weather. No sales reported. Beeswax: 181 lbs. reported received since last report. Demand and trading very light, market quiet and nominally steady. Dealers are offering producers 32-34c per lb. for country run ungraded wax.

From Producers' Associations

WESTERN COLORADO—The honey crop here is short. It will be about 80 per cent of last year's, which was also a short one. Practically no honey has been stored since August 10, on account of showers which were of almost daily occurrence. Shipments of honey are above normal for this date, with inquiry, especially for comb honey, increasing.

The Western Colorado Honey Exchange,
Grand Valley Colo. By Jas. Watson, Jr.

ONTARIO—We will have a full average crop of clover honey this year, and the quality will be above the average. It looks at present as if we would have a full crop of dark grades. Marketing conditions also look very favorable.

The Ontario Honey Producers' Co-op., Ltd.
Toronto, Ont. A. G. Halstead, Gen. Mgr.

Special Foreign Quotations

LIVERPOOL—The honey market is quiet but steady, prices of Chilian in barrels ranging from about 10c to 13½c; Jamaican, Haitian, and San Domingan, from about 8½c to 12c per lb. in American money. Beeswax: Market quiet. Price remains at about 40c per lb. in American currency Taylor & Co.

Liverpool, Eng., Sept. 5.

The A. I. Root Company's Report

Since August 20th we have paid the following prices for honey in carload lots, f. o. b. shipping point, western freight rates: White to water-white extracted, 8½c per pound; light-amber extracted, 7½c per pound; carload lots comb honey, f. o. b. shipping point, western freight rates, fancy, $4.25 per case; choice, $3.75 per case; carload lots white to water-white extracted honey, local freight rate, 9½c per pound. For less than carload lots extracted white to water-white honey from local producers, 10c per pound, f. o. b. Medina was paid, and for local comb honey in less than carload lots, f. o. b. shipping point, our prices have been $4.50 per case for fancy, $3.75 for No. 1, and $3.00 for No. 2.

(Continued from page 673.)

alighting-board, thus providing for an entrance. A piece of building paper can then be cut the right length to reach around one or two hives, as the case may be, when it is fastened to the frame by tacking on laths, driving the nails through the lath and paper into the framework. The paper should extend to the ground on all sides to prevent the wind from blowing under the hive. An opening is then cut through the paper in front to provide an entrance. The lapped-over ends of the paper can be pinned together with nails, after which the packing is poured in place. It should be crowded tightly in place at the corners, but poured in loosely at the sides, so that they will not be bulged out. The upper portion of the paper can then be folded down as in wrapping a package and the whole covered with another sheet of paper tied in place with binder twine. By careful handling single-ply tar paper, sometimes called slater's felt, can be used; but a heavier paper is better for the cover.

XUM

SOUR HONEY DEPT.

My preparashuns for winterin my forthcomin hunger-winter resistant strain of bees is goin steadily forwards, George Demuth and Jack Deyell and other beekeeping highbrows notwithstandin. I am going to laugh last and the last laugh is rated pretty middlin high generally. Now look at it. See the October advantages already. I am just lettin my garden cornstalks ripen up firm and dry ready to pile agin the hives by Nov. 1 comes. Nature's doin my work. I'll take off all the honey I can get off down to the bottom board afore the legal coon huntin season comes in and my wife's eyes will bung out like a wart on a nose when I take the honey into the house to her and that's the time I'll tell her I got a new coon dog arranged for. I aint told her about the new dog yet and have been keeping it over at Ab. Lutz's for she aint none too enthusiastic about my coon fur profits any more since the awful bad luck I had coonin last year and year before. She says she'd rather I'd sleep nights and work days and we'd be further advanced financial. She don't seem to see any disadvantages in work for me. She just can't seem to see work in the same light as I constitooshunly do and is always recommendin it to me and says

(Continued on page 687.)

Patents Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D.C.

Three-banded Italian Queens for October - - 50c ea.
Gentle and good honey-gatherers. I guarantee pure mating, safe arrival, satisfaction.
TAYLOR APIARIES, LUVERNE, ALABAMA.
Lock Box.

New 300 Candle Power Lamp
AMAZING INVENTION. Brilliant, soft, mellow white light, restful to eyes. Burns 96% air. Equals safety, brilliancy of electricity, 1-10th the cost. 20 times brighter than wick lamps. More healthful. Easy to operate. No smoke. No soot. No odor. Low priced. Guaranteed. Table lamps, wall, hanging lamps and lanterns.

AGENTS! $12.00 a Day. Make big money. New plan. Simply accept orders. No experience or capital required. Outfit Free to hustlers. Send for exclusive territory and Free Outfit Offer. Write today
FREE Trial. Liberal Offer. Try it 30 days Free. Write at once for special introductory, low price, offer and free trial opportunity. No risk. No obligation. Send name and address today.
The AKRON LAMP CO.
2490 Lamp Bldg., AKRON, OHIO

HONEY FOR SALE

For the beekeepers whose supply may be short this season. We have the choicest extra quality sweet clover, fine white clover, alfalfa, some mesquite and a limited amount of orange that we can offer our friend honey-sellers who may be short. Also comb, all grades.

WRITE FOR PRICES

The A. I. Root Co.
Medina, Ohio

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1925
Untested queens, $1.00 each. Tested, $1.50 each. 2-lb. package of bees, $3.00; 3-lb. package of bees, $4.50; nucleus, $1.50 per frame. Additional pound of bees with nucleus, $1.00. No disease; safe arrival guaranteed; bees inspected; never had disease.
J. W. SHERMAN VALDOSTA, GEORGIA

NEWMAN'S QUEENS
are absolutely first quality and fully guaranteed. Satisfaction and safe arrival. Untested. $1.00; 6, $5.00; 12, $9.00. Select Untested $1.25; 6, $6.00; 12, $11.00. Circular free.
A. H. Newman, Queen-breeder, Morgan, Ky.

KITSELMAN FENCE

"Saved $12 on 120 Rods," says J.T. Halterman, Rosewood, Ohio. You, too, can save by buying direct at Lowest Factory Prices.
WE PAY THE FREIGHT.
Write today for Free Catalog of Farm, Poultry and Lawn Fence, Gates, Steel Posts and Barbed Wire.
KITSELMAN BROS., Dept. 21 MUNCIE, IND.

(Continued from page 686.)

it wouldn't hurt my fishin friend Ab Lutz any either. But wait till first coonin night comes and I bring home that new dog's first fur production. That and the surplus honey will bung her eyes out till she sees my new bee plans and new coon dog in a right light.

And what will Geo. Demuth and the other beekeepin stuckups be doin this month while I am restin easy or trainin my new dog or fishin while nature is makin my winter packin cases for me all by herself alone out in the garden? They'll be hammerin up quadruple cases or cuttin up tar paper or breakin their old backbones carryin hives into the cellar full of all the honey crop they got this summer and all the sugar besides that they can get their grocer to trust em for, all to the detriment and softenin and enervationin of the bees too. Gee, I can't wait for spring to come when that laugh will be on the other foot, and Ab and I will fish for bass every day this month that our wives are mindin their own business*, and then trappin and coon season opens next month. I was never settin prittier. I feel like singin every day all day long now. This here sour honey department is goin to change to the department of new crop honey, milk and hot biscuits and friend fish.

*P. S. to the above: Have any of you

(Continued on page 688.)

—QUEENS OF—

Moore's Strain

OF ITALIANS PRODUCE WORKERS
That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.

Untested queens, $1.00; 6, $5.00; 12 $9.00. Select Untested, $1.25; 6, $6.00; 12, $11.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, QUEEN BREEDER,
Route 1, Morgan Kentucky.

New England

Beekeepers will find a full line of supplies here.

We can save you time and money, and solicit your orders.

Send for new catalog.

H. H. JEPSON

237 Park St. Medford 55, Mass.

Achord Queens

Splendid honey-producing Italians. Reared in one of the largest, best-equipped queen-rearing and package-shipping establishments in the South.

Select young laying queens, untested, 75c each, any number. Tested queens, $1.50 each, any number.

Promptly mailed to you in large mailing cages with 1925 inspection certificate. Safe arrival guaranteed.

W. D. Achord

Fitzpatrick - - - Alabama

Berry's Reliable Queens and Package BEES

October Special Prices

SELECT UNTESTED QUEENS, ANY NUMBER..... 60c each

PACKAGES WITHOUT QUEENS PREPAID

1-lb. pkgs. of bees, postage prepaid..... $2.50 each

2-lb. pkgs. of bees, postage prepaid..... $3.50 each

If queens are wanted add above price.

Requeen that worthless colony or strengthen it by the addition of a few bees, thus preparing for good wintering and a big honey crop the coming year. It is wonderful what added vim a young queen with perhaps a few bees will give a worn-out worthless colony.

M. C. Berry & Co.

Box 697 Montgomery, Ala.

(Continued from page 687.)

other moderate workin and fishin beekeepers ever heard your wives say your business is hern too?

* * *

What I am now about to say aint to be constrooed as any waverin on my part for my new bee plans and new strain of bees. Not a bit. Only if anythin should ever go wrong with my new strain of bees like fire or Aisle of White disease I have got track of a nother plan of hunger-and-cold-resistant bees and moderate labor as appeals second best to me. Doc Kohn of Grove Hill, Ohio, a heretofore beekeeping stuckup, is practicin and recommendin it to the world. It aint nowhere so near good as mine but it leaves some time for fishing in Oct. and all of Nov. for coonin. Doc got it out of the middle ages or thereabouts but is entitled to be called the Great Resurrecter any way. He's awful enthoosiastic about it. Its simple if your eyes are good and you are willin to work even some. It is to pinch his queens after the honey flow, and then just carry all the combs to the honey house to extract after the brood is

(Continued on page 689.)

HONEY PAILS

MANUFACTURERS OF
"BLOSSOM-SWEET"
AND
BADGER BRAND
.5 and 10 lb. Honey Pails.

We specialize in 5 and 10 lb. round pails and 60 lb. square cans. Plain and Lithographed cans of all descriptions.

WILKES-BARRE CAN CO.
ESTABLISHED 1856
WILKES-BARRE, PENNA.

SILVER BLACK FOXES

An interesting and profitable business that combines well with beekeeping or almost any other calling. Ordinary intelligence and a small amount of time required to care for them. We have fully registered foxes to sell for fall delivery, quality equal to any in the world. Foxes will be shipped either from Ontario or Maritime Provinces, as we have interests in both places. Safe delivery guaranteed to purchaser's station; and, if desired, each fox will be scored and accompanied by official score card from the great International authority on foxes, Mr. Geo. Brackett. A fair deal guaranteed and personal references, if asked for, that should satisfy anyone.

As to my responsibility in a commercial way, would refer you to Bank of Nova Scotia, Markham, Ont.

J. L. BYER, MARKHAM, ONT.

Glass and Tin Honey Packages

F. O. B. Chicago and Points East.

5-lb. friction-top pails.....per 100, $7.00; per 200, $13.00; per 500, $30.00
10-lb. friction-top pails.....per 100, $10.00; per 200, $19.00; per 500, $45.00

F. O. B. Chicago and Detroit

60-lb. cans, cases of two.....per 10, $11.00; per 25, $25.00; per 100, $95.00

F. O. B. Grand Rapids

½-lb. glass jars.....per 2 doz. case, $1.00; 10 cases $ 9.50
1-lb. glass jars.....per 2 doz. case, $1.25; 10 cases, $12.00

Prices on tin packages from Grand Rapids and glass jars direct from manufacturers, made on request. Complete line of cases for comb honey, honey cartons, labels, paste, etc. Send for list.

A. G. Woodman Co., Grand Rapids, Mich.

(Continued from page 688.)

all hatched, and so save too all the honey the new brood would be consoomin. The bees just naturally die a natural death which makes them hunger and winter-resistant bees all right same as mine are goin to be. But Doc's plan is inferior to mine on account of the labor huntin the queen and cells in the fall and the labor and necessary credit (or cash) to buy bees the follerin spring. Besides, too, Doc's eyes aint any too sharp I hear and missin a queen now and then along with a occashonal queen cell he's been extractin somethin besides honey. But by going back a little further into the middle ages or late Roman period of beekeepin he fixed that all right this fall. He brimstoned 'em. Then Huber Root got so enthoosed over Doc's plan that he rushed off down to Grove Hill to help Doc extract with a new extractor designed for brimstoned bees' honey. Doc met him at the railroad station all chested up and they began carryin the brimstoned supers to the extractin house and began extractin big as Pompey and did so till the crawlin bees as what did not succum to Doc's brimstone got up their anatomies both legs and back and front and espeshully necks and ankles and jammed the doorway and blocked the floor space till the extractor hadn't no more room to revo-

(Continued on page 690.)

Queen Talks

BY M. J. DYELL, Apiarist

VALUE OF PROLIFIC QUEENS

(Talk No. 1)

Young prolific queens, introduced in the early fall to normal colonies of bees (each colony having ample comb space for queen to occupy in egg-laying and ample honey for brood-rearing), will produce populous colonies of young vigorous bees to go into winter quarters. This is one of the essential factors in the successful wintering of bees.

These young prolific queens will be in their prime the following spring, capable of producing colonies boiling over with bees to gather the maximum crop of honey from the major honey flow.

Worth-while queens should at least be prolific.

Untested Queens, 1 to 9, $1.20 each; 10 to 24, $1.00 each.

Select Untested—1 to 9, $1.50 each; 10 to 24, $1.40 each.

The A. I. Root Company
MEDINA, OHIO.

Queens, 50 cents each

6 for $2.95 12 for $5.90

Dependable, reliable
Three-banded Italian Queens

G. H. Merrill Apiaries, Piedmont, S. C.

STATIONERY

Printed stationery is a valuable asset to any person. Adds dignity and force to your letters. Send for our free sample book. Prices are right.

The A. I. Root Company
West Side Station, Medina, Ohio.

GROW GINSENG GREATEST MONEY CROP KNOWN

Time to plant is September and October. 1000 seeds and 100 plants for $5.00. GOLDEN SEAL, second in cash returns only to Ginseng. 1000 seeds, 100 plants $4.00. Thirty-two page monthly Magazine on Medicinal Plants $1.00, sample copy 10c. Address

C. M. Goodspeed, Skaneateles, N. Y.

World's Best Roofing
at Factory Prices
"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.
Edwards "Reo" Metal Shingles
have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.
Free Roofing Book
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LOW PRICED GARAGES
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WANTED—Experienced helpers for 1926 for comb and extracted honey. Apply Florence Naile, Sec. Ohio Beekeepers' Asso., Columbus, Ohio.

SELLING 50 eight and ten frame colonies bees, $4.00 to $8.00, guaranteed no disease. Bee supplies, foundation mill, 10-inch, $55.00. Hopkins Bee Farm, Otterville, Mo.

WANTED—Student and experienced helpers for fall season work in large bee business. Located in best resort section in northern Michigan. State age, experience, wages wanted. L. R. Marsalek, Clarion, Michigan.

(Continued from page 689.)

lute much, so they deesisted gladly and Huber came home and when he was able to get out of the house over to the office he reported that Doc's plan was a good one in general but it had some points in it about as large as bee stingers that he didn't like and wouldn't endorse. But I say Doc is on the right trail for he's lookin toward light-labor beekeepin and his plan makes bees entirely resistant most ways. He must expect to be laughed at the same as me and all new leaders in any field of progress. So I am for Doc, but his plan aint nowheres the equal of mine even with the brimstone improvement. No it taint. Come out into the full light with me, Doc.

* * *

Ernest Root has been back now three weeks from gallavantin all summer around the Redpath Chautauqua Bureau circuit, but I aint yet seen any disturbance around that pile of slabs back of his garage that his wife had brought up from the sawmill last November for firewood and the improvement of Ernest's health by exercise. Ernie is awful neglectful of his health in some ways.

* * *

J. L. Byer of Markham, Ont., aint yet sent any silver foxes and wire fencin to set me up as his United States partner in

(Continued on page 691.)

To New York State Beekeepers

Have you received our descriptive price list on HONEY CONTAINERS? We have a good stock of everything needed to market your honey in the most up-to-date manner—display and corrugated shipping cases, cartons for comb honey, all kinds of honey pails and cans.

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THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO.
E. B. SPITZER, PRES. E. R. ROOT, VICE PRES. H. E. AYLARD, CASHIER

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies. Write for our terms and prices.

"Falcon"

Supplies--Queens--Foundation

W. T. Falconer Mfg. Company
Falconer, New York (near Jamestown)
"Where the best beehives come from."

Ask for catalog. *Booklet, "Simplified Beekeeping for Beginners," free.*

(Continued from page 690.)

silver fox farmin. I attribute this soully to his being over busy takin off his honey crop for I guaranteed all he asked in his Gleanins advertisement. I expect to have the foxes and fencin here sure this month. So send in your orders direct to me and make payment to me direct. Mr. Byer couldn't have a better natural representative in the U. S. than me and I am going to get him a lot of fox business. I can spare the time from my beekeepin some way. OLD DRONE.

P. S.—A good many kind correspondents must wait to be published in this dept, for the beekeepin world is demandin a very full and all most tecknickel report on my development of the new strain of bees from hour to hour. Just today J. L. Byer has sent along some sarcastic observashuns about my being his U. S. fox partner. I can tell him he will lose me as a partner if he procrasternates much longer. I aint got to be his or no body else's partner when I get to sellin queens from my new strain, and he'll crawl over here from Canady on his hands and knees for one of those queens and he wont get one so he wont if he dont send those foxes and fencin by the 31st inst. Always remember to remit direct to me for the foxes.

Honey Containers

5-lb. friction-top pails, per case of 12	$1.10
10-lb. friction-top pails, per case of 6	.90
5-lb. friction-top pails, per carton of 50	3.50
10-lb. friction-top pails, per carton of 50	5.00
60-lb. square cans, per case of 2 cans	1.25
60-lb. square cans, in bulk, each	.40
16-oz. round glass jars, per case of 24	1.25
6½-oz. tin-top tumblers, per case of 48	1.60

All above prices are F. O. B. Boyd, Wis.

Write for our prices on comb-honey shipping cases.

AUGUST LOTZ COMPANY
BOYD, WISCONSIN.

Superior Italian Queens

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One or 1000 at **50c per queen**

Tested, one year old, at same price

Absolute Satisfaction Guaranteed

THE STOVER APIARIES

Tibbee, Miss. **Telegraph Office, Mayhew, Miss.**

Mix–mix–mix

—to just the right shade

WITH his long steel blade the color mixer turns and works the mass of color. He adds to it bit by bit until he proves on the press that it matches the shade wanted. Perhaps the last printing was months or years before—the new run must be the same. He works with all the care and spirit of an artist seeking the correct tone color—and when the presses transfer the original design in its true color harmony he feels his effort well worth while.

EVEN when they have previous experience with the same design to guide them, these color mixers at every Canco press must use their utmost care on every job. Such care shows results in the consumer appeal of your finished containers. It reflects Canco desire to produce better lithographed honey containers.

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